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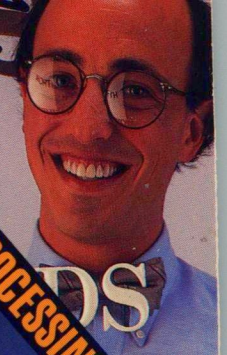
The #1 Apple II Magazine



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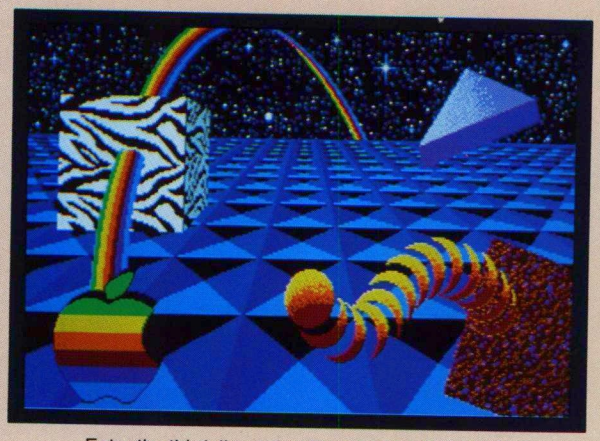
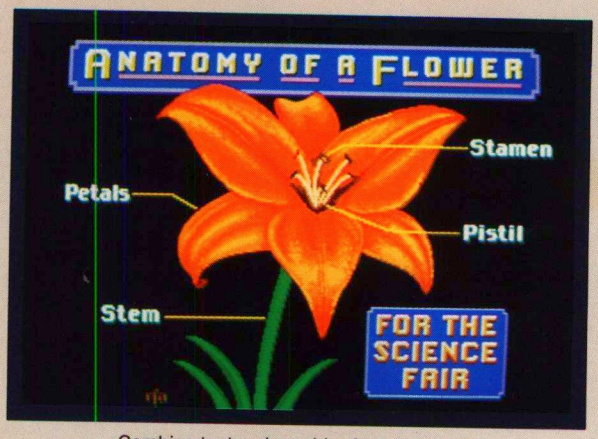
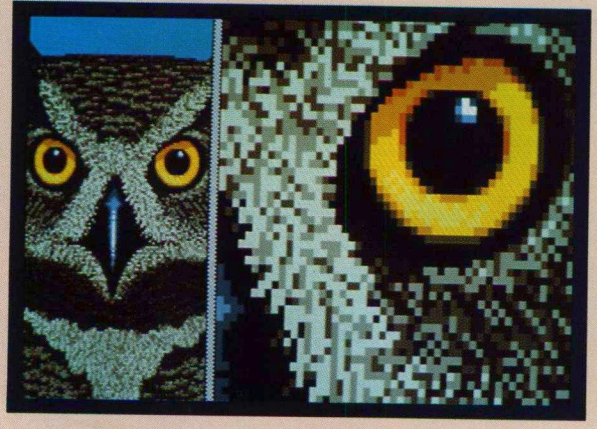


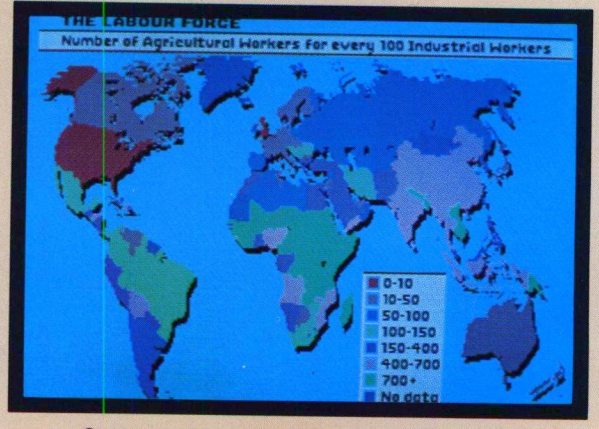
Enter the third dimension. Turn 2-D into 3-D with a click and get a new perspective!



Combine text and graphics for educational presentations. It's easy enough for kids of all ages.



Zoom in through four levels of magnification and put the gleam in the owl's eye.



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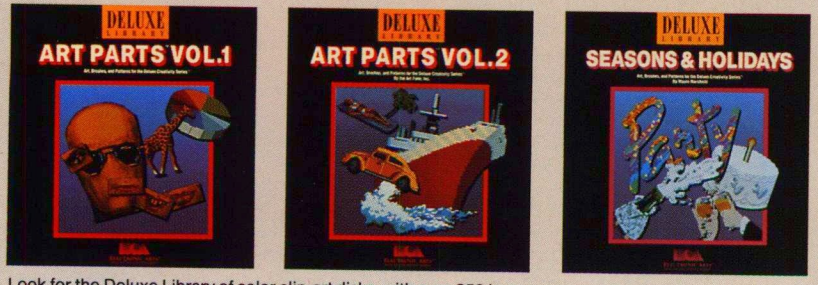
TO ORDER DELUXEPAINT II: Visit your retailer. If you can't find DeluxePaint II there, call 800-245-4525 (in CA 800-562-1112), and place a direct order on your VISA or Mastercard. To order by mail, send check, money order, or VISA/Mastercard information to Electronic Arts Direct Sales, P.O. Box 7530, San Mateo, CA 94403. The regular direct-order price is $99.95; add $3 for shipping and handling ($5 Canadian). There is a 30-day money-back guarantee on direct orders. Allow 6-8 weeks for delivery. Apple IIGS is a trademark of Apple Computer, Inc. Paintworks Plus is a trademark of Activision, Inc. DeluxePaint II is a trademark of Electronic Arts.



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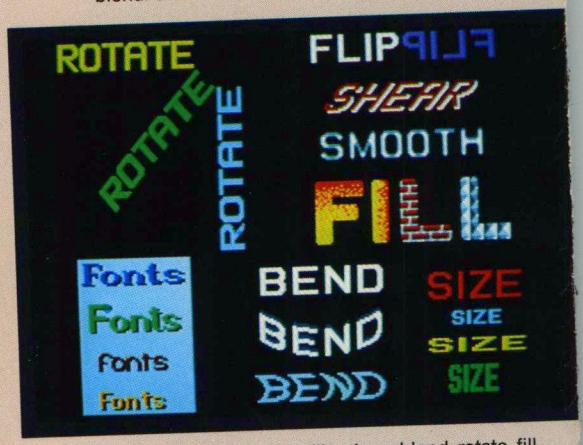

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INTRODUCING DELUXEPAINT II. The images above were all produced with the most advanced paint program ever created for a personal computer. The only paint program that lets you zoom in to see your painting in four levels of detail, create custom gradient colo ranges from a 4,096-color palette, freeze an image and paint over it, and do dozens of other things you never knew a personal computer could do. The program is DeluxePaint I The result is more than just a pretty face.

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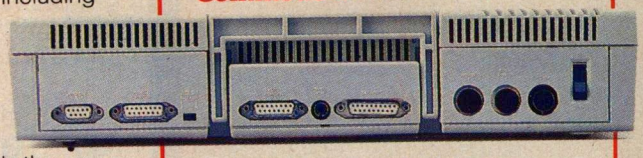

Speed through the largest software library in the world.

The Laser 128EX runs Apple IIe and //c software at speeds never before acheived. Its built-in 192K RAM (128K – User and 64K – Video) memory and triple speed processor lets you run programs at a world class pace. The Laser 128EX is a machine designed for leading performance.

LASER 128EX

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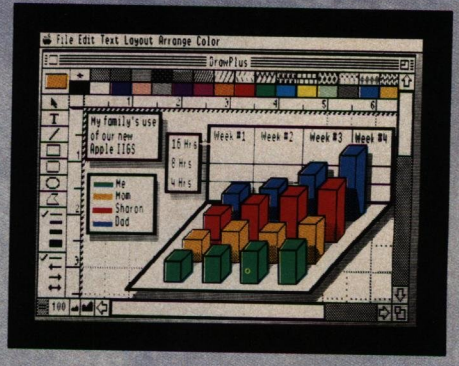

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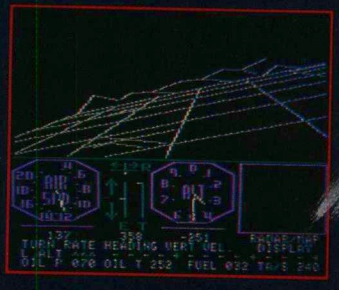
1987 - Expanding Scenery disk coverage; East Coast, Japan, & Europe

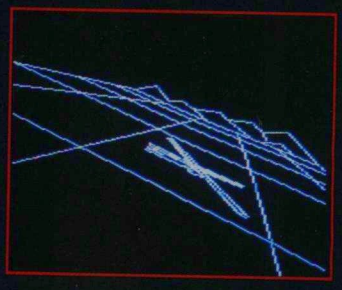
1986 - Flight Simulator II for the 68000 computers

1985 - High-performance Jet flight simulator for the IBM, Commodore 64, and Apple II computers

1982/1983 - Microsoft Flight Simulator & Flight Simulator II



1979 - 3D graphics applied to the original FS1 Flight Simulator for the new Apple II and TRS-80 computers



1977 - SubLOGIC's 3D graphics package in BASIC and M6800 Assembly Language

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Some say our technology has helped us define the state of the art in flight simulation. We believe our ten years of dedication have gotten us where we are today.

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We invite you to help us celebrate our first decade of success, and share in our anticipation of the next ten years to come. SubLOGIC tenth-anniversary promotional shirts and posters are available at your dealer or directly from SubLOGIC. See your dealer, or write or call us for more information.

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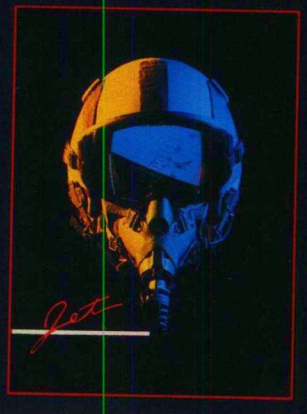

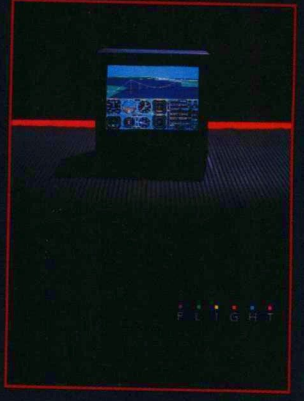

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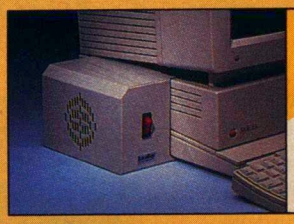

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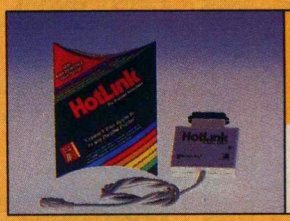

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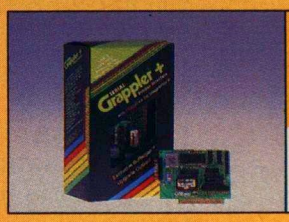

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NOVEMBER 1987 VOLUME 5/ISSUE 11

COVER STORY

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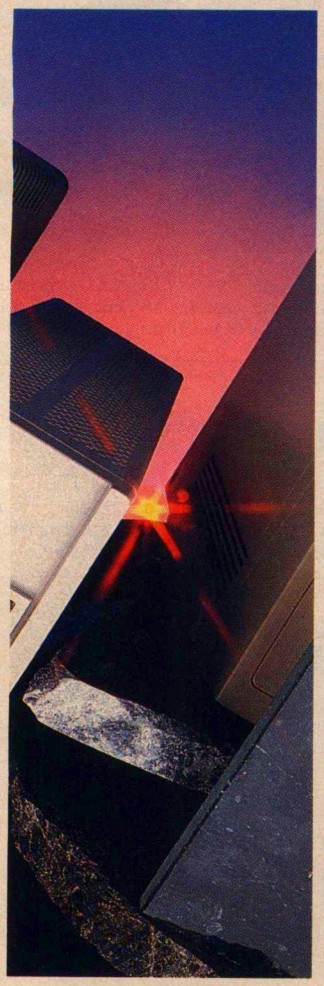
HARD-DISK DRIVES MADE EASY
BY MICHAEL FISCHER
Hard-disk drives may seem less than thrilling—until you get a taste of the speed and convenience they offer. Here's a look at six major brands of hard-disk drives for the Apple II Plus, IIc, IIe, and IIGS. Fischer offers tips on choosing the best drive for your system.



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BY TAD DAVIS
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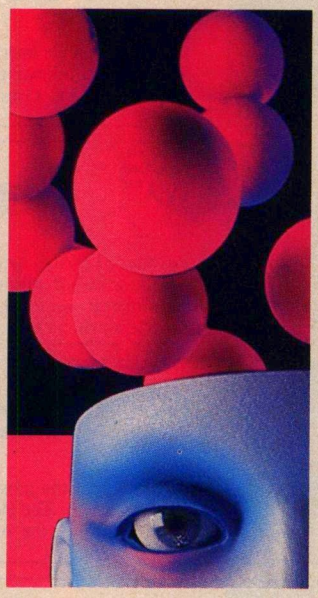

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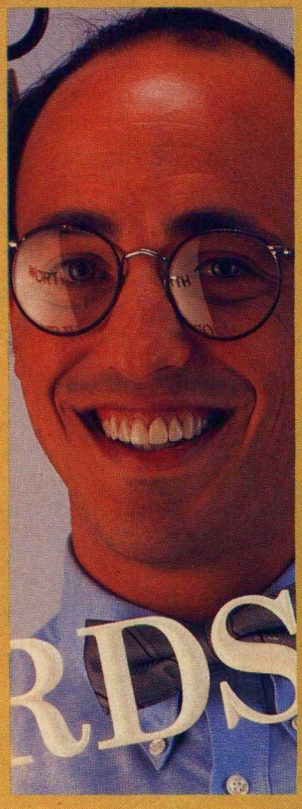

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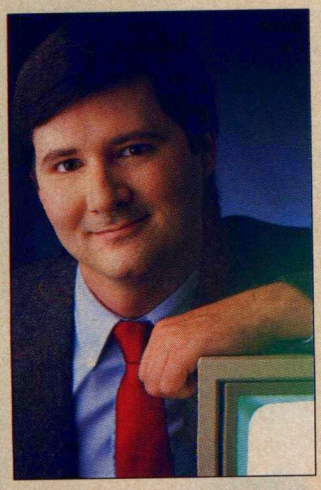

EDITOR'S PAGE

COMPUTER CREATIVITY ABOUNDS

There's a lot of computer snobbery going around these days. Computer elitists with Macintosh IIs, IBM PS/2 Model 80s, and other high-end systems are bragging about the capabilities of their new pets while looking askance at Apple IIs and PC clones. According to these folks, you can never have too much RAM or too fast a CPU. The snobs think that even an Apple IIGS or IBM PC AT is pretty ho-hum; if it doesn't have a full 32-bit processor, such as the Intel 80386 or Motorola 68020, they figure it isn't even worth thinking about. Fortunately for you and me, the snobs are wrong.

I've got to admit to being dazzled by the latest whiz-bang technology. I like to have the latest and greatest computer just as much as anyone. Luckily, because of my job, I get to indulge my computer appetite, and as testimony to that, I have both an Apple IIGS and a Macintosh II on my desk and an Apple IIe at home. But despite all the megabytes of RAM and disk storage available on my various systems, I've got to say that the Macintosh II is not that much more useful than an Apple II.

Now don't get me wrong—the Mac II is a pleasure to operate and is definitely a lot more powerful than the Apple IIe and IIGS I use. The eight megabytes of RAM in my Mac II get moved around by its processor a lot faster than the two megabytes of RAM in my IIGS or the one megabyte in my IIe, but I really don't use the Mac II for a whole lot that I can't do on an 8-bit IIe or 16-bit IIGS. Sure, the Mac II is faster, but when I'm doing something like word processing, the computer's usually waiting for me to type, and the writing process goes just about as fast on an Apple II. And getting my MCI mail via modem goes at just the same speed on the Mac II and the Apple II.

For further proof that creativity abounds in the world of limited bits, take a look at the "Speaking of Graphics Gallery," which appears in *A+* each month. People creating graphics with Apple IIs are really creative and artistic; by comparison a lot of business graphics produced on high-end IBM PS/2 model 80 systems are so bad that some of the graphics demos could get booked onto the "David Letterman Show" as "Stupid Pixel Tricks." The creativity that Apple II artists display goes to show that artistic creativity has nothing to do with the density of pixels on the screen.

The IIe and IIGS can provide many of the basic features and capabilities of the Mac II.

My point is that the difference between having a personal computer and not having a personal computer is a lot bigger than the difference between an Apple II and a Mac II. Indeed, both the IIe and IIGS can provide many of the basic features and capabilities of the Mac II, such as the mouse, pull-down menus, windows, color graphics, sound, and slots for add-in expansion cards. These features are cruder and slower on a IIe, better on a IIGS, and great on a Mac II—but the features are common to all the computers. There is no reason why even state-of-the art software such as the new HyperCard program for the Mac can't be rewritten to run on an Apple II. Personal computers offer tremendous potential as productivity, information, creativity, and

EDITOR'S PAGE

education tools. You can obtain these major benefits from almost all major personal computers, from the mature Apple IIe to the cutting-edge Macintosh II.

The vast majority of all time people spend using personal computers is spent in only six areas: word processing, spreadsheets, database management, graphics, telecommunications, and entertainment. The potential uses for personal computers are virtually limitless, however, and the number of possible applications have only begun to be explored.

Creativity in Contest Entries

Further testimony to the incredibly creative things that people are doing with their Apple IIs came to us in the form of the many hundreds of entries we received in our first annual "How I Use the II to Teach" contest. Reading through the fascinating essays that entrants wrote describing their teaching experiences stirred up a wide range of emotions, from admiration to laughter to compassion.

I had to admire Norman Coombs, the blind history professor at Rochester Institute of Technology who uses his Apple IIe and an Echo speech synthesizer to allow him to write and proofread his work and to help him read student papers. And I smiled when I read about such things as a woman who taught her sister CAD (computer assisted dieting); Kid-E-Capitalism, a business simulation for kids; a couple who used their Apple for fertility testing so they could have a baby; and students at Lowell Academy in Lorain, Ohio, who consider students at other schools to be "extra-terrestrial life forms" as part of their elaborate space-shuttle simulation.

Often I felt compassion as I read about the many people who are finding creative ways to use their Apple in overcoming personal crises and other difficulties. Here are just a few examples of compassionate computing: Wes Mun wrote to tell us how he used his Apple to help his mother overcome a stroke; Jay Silverman wrote about using the Apple II to teach speech skills to his daughter, who has Down's Syndrome; and William Reed described how he helped an illiterate adult friend to read.

The number of good entries in our contest was really overwhelming, and picking the winners from such a fertile field was difficult. I want to thank all the people who took the time to write to tell us about the many creative ways they are using their Apple IIs to teach. We'll be sharing more stories about how people are using their IIs to teach, both in the classroom and in the home, in upcoming issues. In this issue, we announce our contest winners. Congratulations to Virginia H. Carney, winner in the home category, and Terence Nickolette, winner in the classroom category. And thanks again to the other entrants, and to the judges, companies, and others who helped make our first annual "How I Use the II to Teach" contest a great success. ✚

Fred

FREDERIC E. DAVIS/**EDITOR IN CHIEF**

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Beyond Zork *is available at your local dealer for the Apple II series, Macintosh, Commodore 128, Amiga, IBM PC and 100% compatibles, and Atari ST. To order direct, call 1-800-262-6868. Coming soon: Apple IIGS.*

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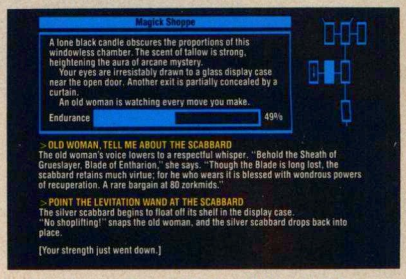

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Screen shown is for the Commodore 128 version.

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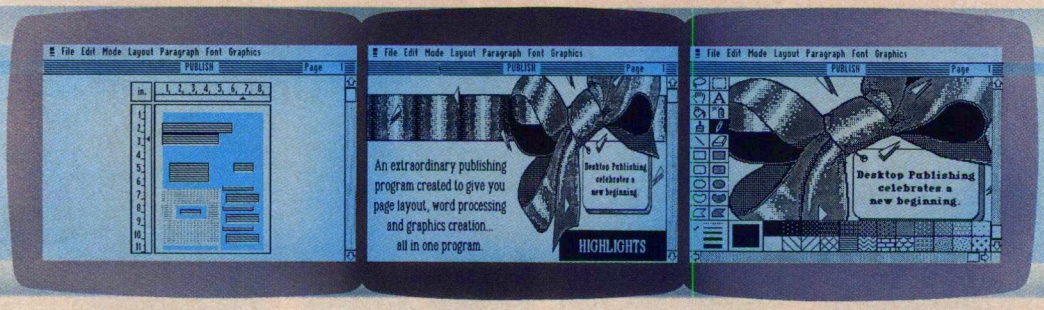

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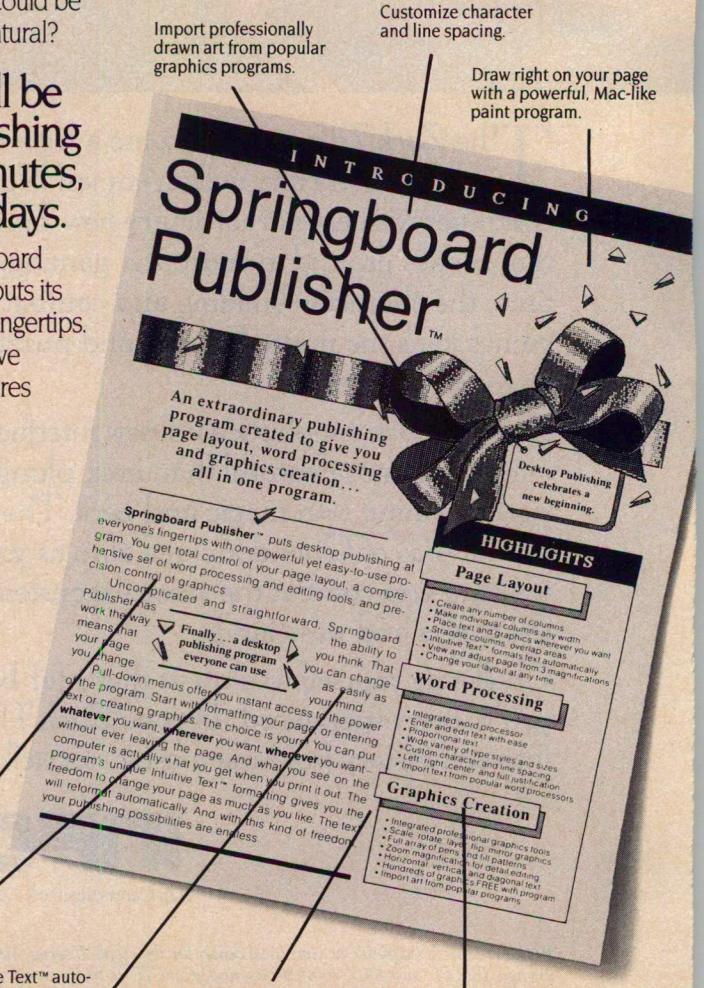
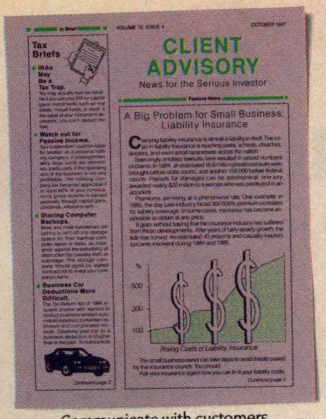
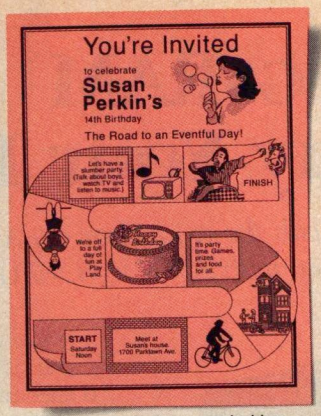
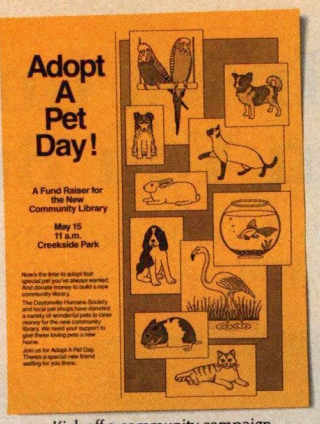




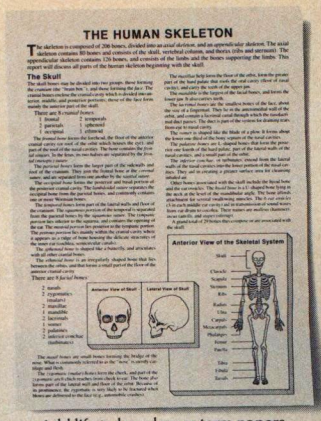
Communicate with customers.



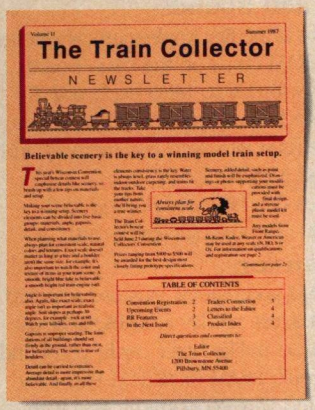
Make your invitations more inviting.



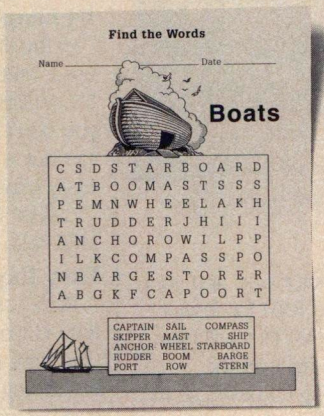
Kick off a community campaign.



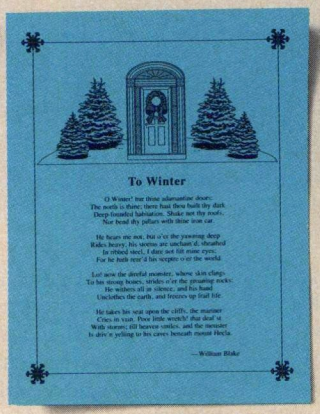
Add life to bare bones term papers.



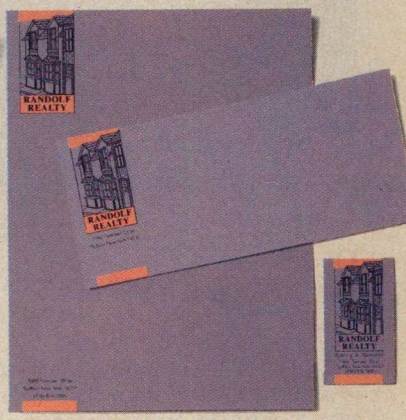
Keep your club on the right track.



Create worksheets that really work.



Express yourself poetically.



Get down to business.

You can size your columns individually, then add inset text and graphics frames anywhere on your page—even overlapping each other and straddling columns.

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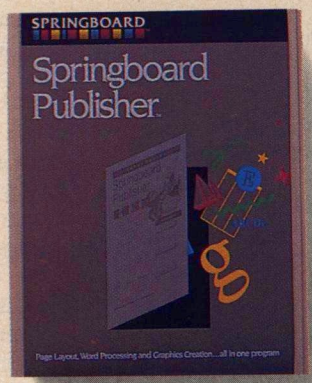

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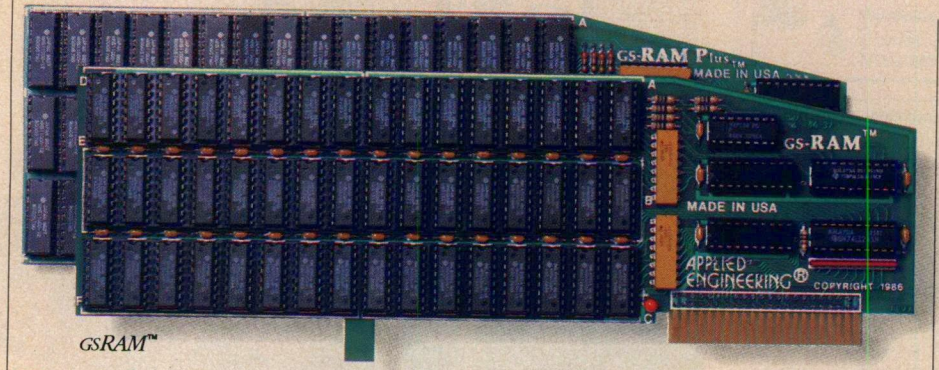

GSRAM™

Remember the 16K cards for the II+ and the 64K cards for the IIe? At the time, that much memory seemed like a lot. But when the owners of these memory cards came to us for more memory, many had to throw away their smaller Apple memory cards or try to sell them. Most of our customers told us that had they known about Applied Engineering's larger memory cards when they bought their Apple, they would have purchased them at the same time.

GSRAM and GSRAM Plus are available now, allowing up to 8 MEG of memory expansion. That's 8 times the memory capacity of Apple's card and just look at the benefits that only GSRAM and GSRAM Plus have over Apple's card:

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- Made in USA

GSRAM for More AppleWorks Power

Only GSRAM and GSRAM Plus eliminate AppleWorks internal memory limits, increasing the maximum number of records available from 6,000 to over 25,000 and only GSRAM and GSRAM Plus increase the number of lines permitted in the word processing mode from 6,000 to over 15,000. And only GSRAM and GSRAM Plus offer a built-in printer buffer so you can continue using Appleworks while your printer is printing. GSRAM and GSRAM Plus even expand the number of lines in the clipboard from 255 to 2047 and will auto segment large files so they can be saved on two or more disks. You can even have Pinpoint or Macroworks and your favorite spelling checker in RAM for instant response. GSRAM and GSRAM Plus will even display the time and date right on the AppleWorks screen. Nothing comes close to enhancing AppleWorks so much.

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Simply plug GSRAM into the IIGS memory expansion slot and you've got up to *8 megabytes* of RAM at your fingertips—all of it instantly and automatically recognized by the IIGS. GSRAM is compatible with all IIGS software, including AppleWorks, as well as BASIC®, ProDos, DOS 3.3, PASCAL®, "C" and CP/M®.

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GSRAM is available with 256K, 512K, 1 MEG or 1.5 MEG of memory already on board. If you don't need the full 1.5 MEG now, you can choose a GSRAM with less memory and expand it up to 1.5 MEG in the future—or upgrade to GSRAM Plus for a small charge.

"In quality, performance, compatibility, expandability and support, Applied Engineering's GSRAM and GSRAM Plus are number one."

Steve Wozniak, the creator of Apple Computer

With an optional piggyback card, you can expand GSRAM even higher than 1.5 MEG! (Other cards are only expandable to 1 MEG.)

GSRAM Plus—for Growing by Leaps and Bounds

GSRAM Plus is the first Apple memory card to use 1 MEG RAM chips on the main board. It's available with 1 to 6 MEG on board. If you don't need the whole 6 MEG now, you can buy a GSRAM Plus with less memory and easily expand it in the future.

GSRAM Plus can be expanded up to 8 MEG with an optional piggyback card.

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Both GSRAM and GSRAM Plus use standard RAM chips that are readily available and just plug right in. So unlike other cards, you'll find expanding your GSRAM or GSRAM Plus easy, convenient and very economical. And with our optional ROM expansion module you can even increase the IIGS's ROM space and all in just one slot.

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LETTERS TO THE EDITOR

A CALL FOR IIc COVERAGE

Dear A+: I've been a IIc owner since 1984, and since then every peripheral or major software package I've bought was a result of a product review in a computer magazine. I depend on A+ and similar magazines for news on new developments and add-ons for my IIc. So that's why I'm writing to you. I've been a little disappointed lately with the content of IIc information in A+. It seems the GS has the spotlight once occupied by the IIc. It would be nice to see just a little bit more on the IIc.

I'm just one reader, so it might not change anything, but I think I speak for most IIc owners when I say we're forgotten but not gone.

JAY MURTHY
COLORADO SPRINGS, CO

SUPPORT COSTS

Dear A+: I recently received a flier from the publisher of Dollars and Sense announcing a new product-support policy. I was totally amazed when I saw that to get full support, you must pay $75 per year or $15 per call. This policy makes this fine program, in my opinion, prohibitive for the average user. I have spent a not small amount on this program, and now it is virtually useless to me, since it is prohibitive for me to query the publisher when I have a problem. If anyone is considering Dollars and Sense, they should look into the support program and make sure it is what they can live with.

RICARDO G. NELSON
FORT COLLINS, CO

PC TRANSPORTER TOO LATE

Dear A+: Personally, I think that the Applied Engineering PC Transporter is a good idea that came to fruition too late, especially at the current price. Applied Engineering seems to me to be whipping a dead horse in the face of still-declining prices in the IBM PC market, which includes IBM itself.

If PC Transporter had come out in 1985 or mid-1986—a few months after the original design idea—at today's retail price, it would have been great, but today anyone can visit even a toy store and buy a 100% compatible PC clone with IBM-compatible 5¼-inch floppy drive, 640K RAM, interfaces for monitor and printer, and IBM-compatible expansion slots for $699 or less.

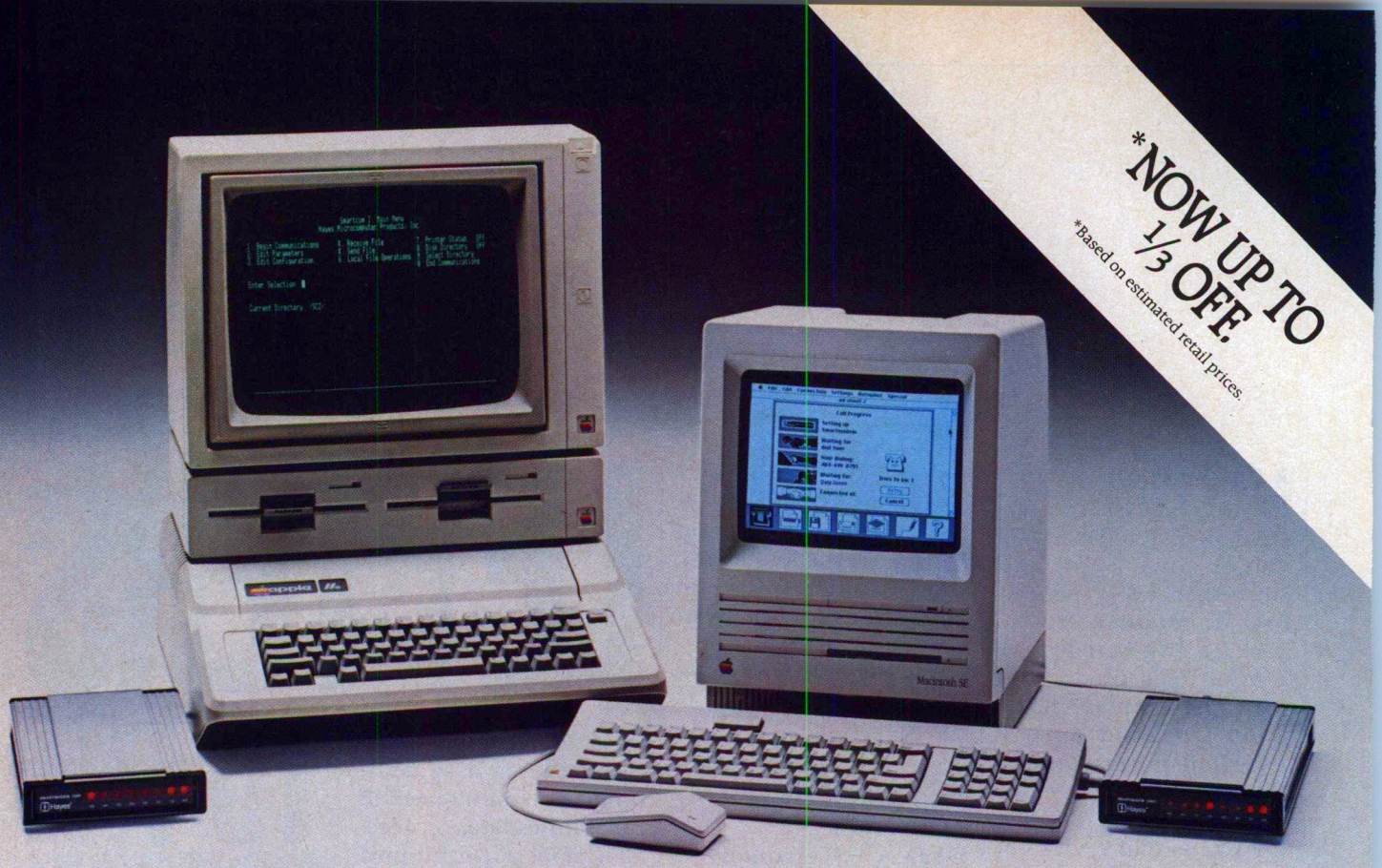
So why buy a hybrid dedicated board and orphan disk drive to turn an Apple II without function keys into an IBM that will end up costing you more than a freestanding PC clone, unless you use a hard-disk drive? At least the clone would be resellable as a separate unit if you didn't need its capabilities later or needed a more powerful unit. With the dedicated board, you must always have an Apple for IBM work, and the Apple is tied up from being used as an Apple while Dad does his work. Dad could buy a PC clone for the same money.

Higher-than-IBM processing speeds are not uncommon in clones, table space is of minimal concern compared to the investment value of a product down the road, and most of us probably don't need to transfer information between formats. For it to be desirable to me over a PC clone, the PC Transporter would have to retail for about $300 and use everybody's IBM's drives so I could get into a completely operational system for less than $500. I thought the whole idea was to get IBM compatibility at considerably less cost than buying a whole unit by using the Apple power supply, keyboard, and other hardware.

The possibility of turning Apple data into IBM data surely must be limited by the application programs available in both Apple and IBM format. I just want to use IBM software, save on IBM-formatted disks, and have them work with other IBM-compatible computers that have the same software. Again, it would seem better to do the work on a separate PC clone, and it would already be compatible without conversion or specially formatted disks.

Applied Engineering's development time would have been better spent if the company had created a MacInporter board instead. At least it would help Apple sell more Macs to businesses in which operating ease, desktop publishing, and graphics with IBM compatibility are presently just a dream.

MARK BILGER
TEMPERANCE, MI



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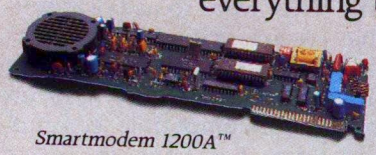

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CIRCLE 160 ON READER SERVICE CARD

LETTERS

APPLE DOESN'T LISTEN TO A FAN

Dear *A+*: I would like to respond to your editorial, "Listening to a Fan," in your August issue. From past experience, I know that Apple does not listen to its fans.

I have a IIc that I desperately want to upgrade to a IIGS. Dealers don't offer a plan, so I went right to Apple. After two letters, I finally sent another by registered mail (to find out about an exchange). After that, I sent one more letter. After still not hearing anything—four months after the first letter—I contacted the Better Business Bureau near Cupertino to ask for help.

About four weeks after my letter to the BBB, Apple sent me a letter that stated, "If your letter is not addressed to a specific dept., we have no way of knowing where it should go to . . . I have forwarded the letter to a correct dept." Since I got that letter, it has been more than two months. Furthermore, all my letters *were* addressed to the Customer Relations Department, where they were supposed to go.

Previous to this event, I purchased my IIc in late November. Being only 16, I didn't have much money, so I looked forward to the Apple Education Discount Program. I bought a IIc, UniDisk 3.5, and ImageWriter II. The education discount applies only to college students, however. Luckily, the salesman did give me somewhat of a discount. The 3.5 drive was backordered, however.

When I got the drive a week later, I tried it out. It did not work, so I brought it back the next day. We determined that it worked OK, so the IIc was not 3.5-compatible. Monday morning the IIc was exchanged. The next Tuesday I was back with the IIc to be exchanged for another IIc (because the new one didn't work). Still no luck. I called ComputerLand, where I'd bought it, and told the salesman it didn't work. He said he would do some checking with the Apple technician.

The next Saturday, we brought

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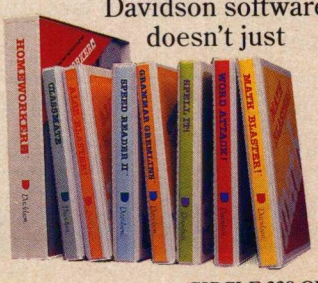

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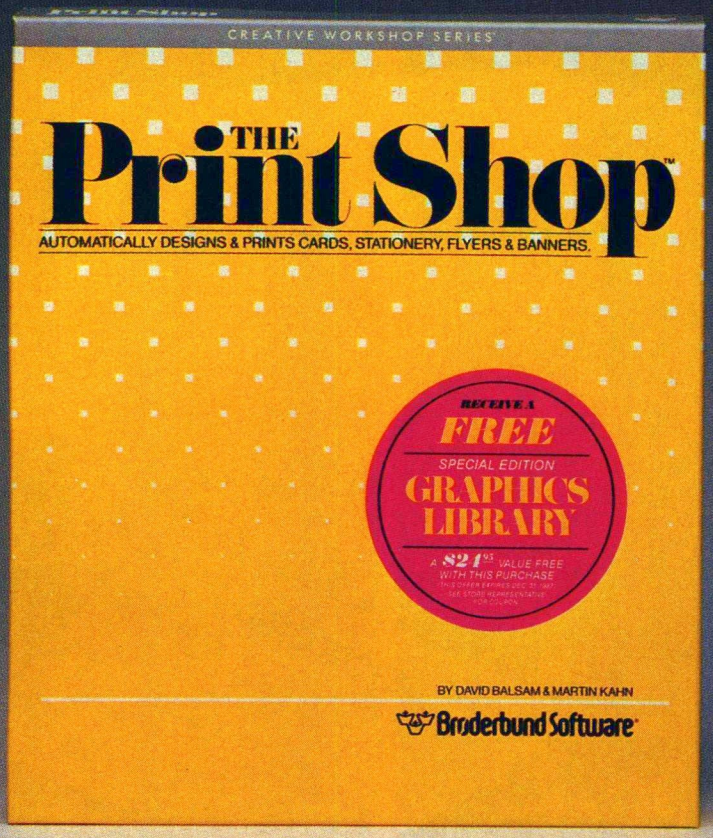
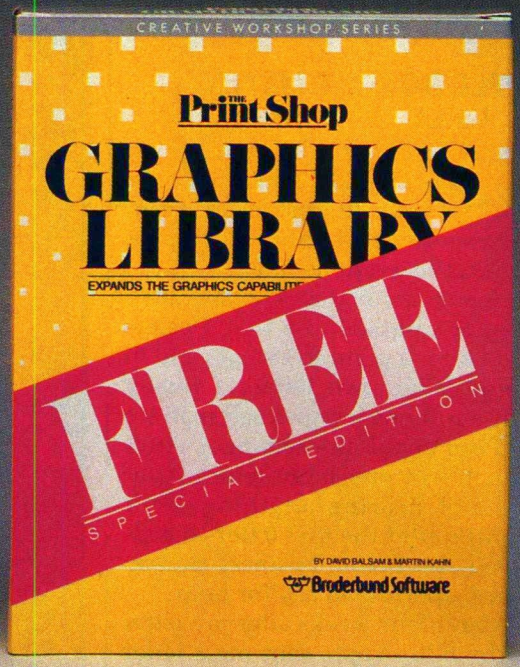
CIRCLE 338 ON READER SERVICE CARD





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LETTERS

the drive and the IIc back. For more than three hours, my father, the salesman, and I all worked on different methods. The drive's power went on but did not work on three IIc computers. At the end of the three hours, we left with the salesman to do more checking.

That Monday morning, I decided to do my own checking. I called Computer Corner of New Jersey, where I spoke with a salesman. He said I needed the System Utilities disk that came with the drive. I hadn't gotten one, but he had an extra, so he *gave* it to me. Unfortunately, it did not work. I decided to call Cupertino.

The 800 number could not help, so I called the Customer Relations Department with me paying for the call. After half an hour, I learned that I could not talk directly with a technician. I had to go through my dealer (who was giving me the runaround). I, the all-important customer, was shut out.

By Wednesday, ComputerLand still had no luck. My father went to the ComputerLand regional manager. Finally, by the next week, our problem was solved! What was it? It was an Apple 3.5 Drive, not a UniDisk 3.5. By the end of December, my IIc was finally set.

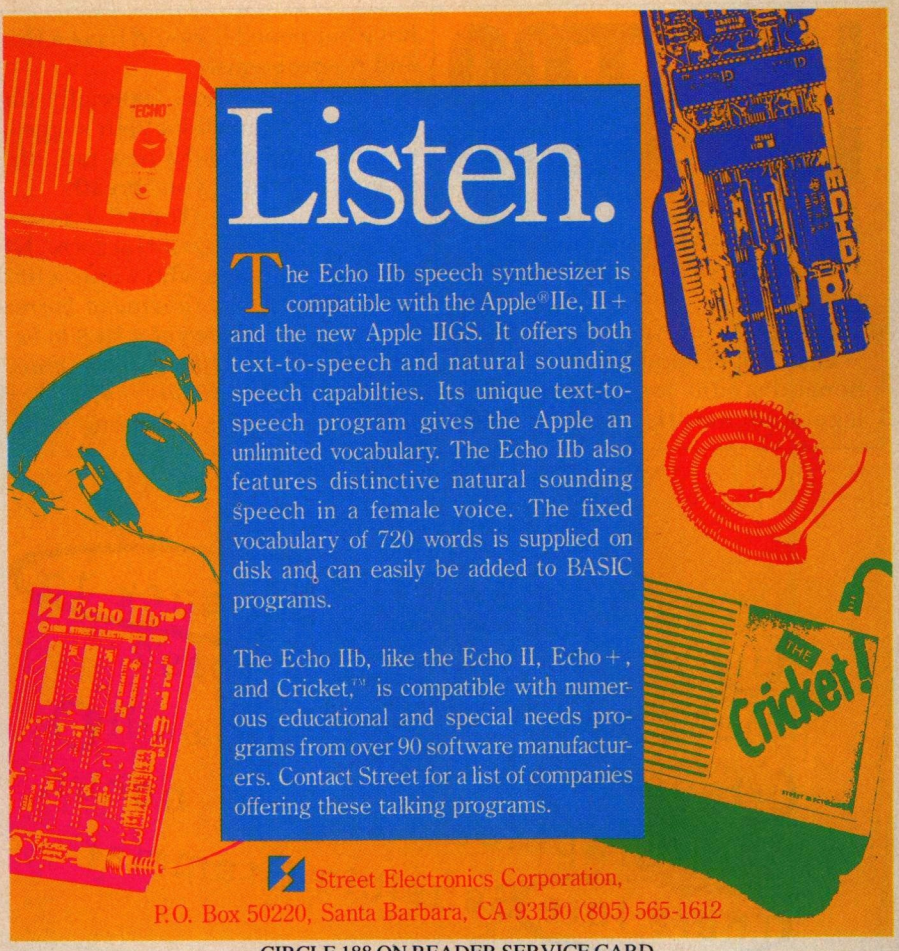
By the first week of January, my disk drive didn't work anymore. Since it was still under warranty, I got a new one.

Later, in February, I had a problem, which I finally got fixed a few weeks ago. In the middle of a program, I would be shut out, as if the keyboard was locked out. I would turn on the computer, and nothing would happen. Sometimes the IIc would address ROM or break out of the monitor. The CPU had to be completely replaced. When I wrote Apple, of course, no response.

Three months later, with the computer out of warranty, I had the exact same problem. The whole motherboard had to be replaced again, and it works fine now. Of course, no word from Apple.

This is all 100% true.

What did I learn? In buying an



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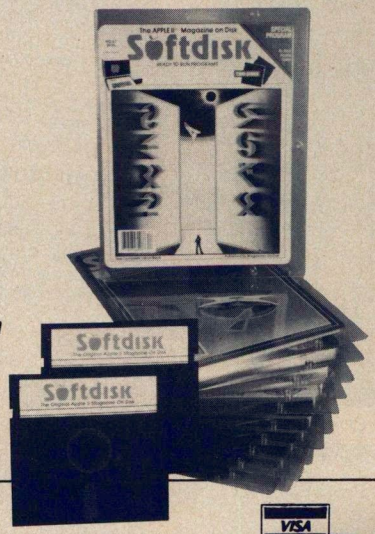

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CIRCLE 222 ON READER SERVICE CARD

LETTERS

Apple, consider these choices:
1. Pray to God you never have problems.
2. Don't buy an Apple.

Had Apple sponsored an educational discount for other-than-college students, this would never have happened. I would have a IIGS and no problems(?).

I still want a IIGS. Especially for its *G* and *S*. And about your suggestion to Apple about a new fan, Mr. Davis, don't hold your breath.

TODD BATTERSON
NORTH HALEDON, NJ

P.S. Know anyone who wants a IIc?

Yours is the classic runaround horror story. If you had bought a IIGS to begin with, however, there's no guarantee that things would have been smoother. As far as upgrading to the IIGS goes, Apple does not offer an exchange program for IIc owners, a fact that has upset plenty of IIc owners. The fact is, though, that IIe owners may not be that much better off. If they buy the upgrade kit, they will probably need to buy several pricey peripherals as well, causing the investment to be quite high (see our February 1987 cover story). If your heart is set on a GS, your best bet is to sell your IIc and buy a new GS.—Editors

WHERE'S A MAC CARD?

Dear *A+*: I couldn't agree more with Lou Smith (*A+* "Letters to the Editor," September 1987) regarding Macintosh programs being available for the IIGS. The idea of Apple Computer stipulating that the IIGS is a "game player's educational computer" is absurd.

I own an Apple IIe, and I use it professionally in the music field, as well as for word processing and personal business. I would love to upgrade to the IIGS, but all the serious music software is being written for the Macintosh or IBM. As the market for serious professional music software is necessarily limited (i.e., not too many music hobbyists willing to pay $300+ for a specialized program), programmers tend to write for the computer that is most available and specialized to the perceived needs of their customers. This tendency seems to be true also in the area of graphics and desktop publishing: The vast majority of programs are for the Mac or IBM—in spite of the fact that GS stands for "graphics and sound."

Now, what is *particularly* ironic is that I can buy an IBM-compatible card to put into my Apple IIe and run IBM programs! If *that* is possible, why can't Apple make a Macintosh-compatible card to run in the IIGS? My guess is that Apple has specifically avoided manufacturing such a card so that it can enjoy increased sales of Macs.

I know you are the "Number 1 Apple II Magazine," but doesn't it seem just a little weird that the most exciting news to date about the Apple II is that now it can be IBM-compatible? Even the lowliest IBM computer may be upgraded to the newest standards. Why then can't the IIGS at least be upgraded to the Mac?

ERNIE MANSFIELD
BERKELEY, CA

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Sensible Grammar ($99.95) which works on Apple IIGS, 128K //e and //c, and **Sensible Speller** ProDOS ($125), which works on Apple IIGS, //c, //e and II+, are available on 5" and 3.5" disks. **Sensible Speller IV** ($125) works with Apple //e, //c, II+, II and Apple-compatible computers. **Sensible Technical, Stedman's Medical** and **Black's Law** Dictionaries are available on 5" disk for $39.95 each. All programs are available separately.

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CIRCLE 130 ON READER SERVICE CARD

Æ Update . . .

PC Transporter meets fifth and final performance milestone. The manufacturing and engineering departments at Applied Engineering have accepted the fifth and final milestone from The Engineering Department for PC Transporter (formerly "Little Blue"). The final stage included a production release package containing the necessary information to manufacture the PC Transporter. Applied Engineering has begun manufacturing the PC Transporter card as well as the optional 5.25 inch 360K IBM-type disk drive. The necessary support software is still undergoing some final improvements and will continue to be refined until the product is ready for shipment. With the further changes in software, Applied Engineering hopes to get the IBM compatibility greater than the approximate 98% that it currently has. The PC Transporter can control both 5.25 inch and 3.5 inch disk drives. When using the Apple 3.5 Drive (not the UniDisk 3.5), PC Transporter can run either Apple or IBM formatted disks from the same drive. When using IBM 5.25 inch disks, an "IBM-format-only drive" is necessary and is sold as an option by Applied Engineering. Applied Engineering is taking orders for PC Transporter with delivery in November.

TransWarp has new low price. Effective October 1, Applied Engineering has lowered the price of its TransWarp accelerator from $279.00 to $219.00. TransWarp is the fastest accelerator card available, increasing the Apple II Plus or IIe processing speed up to 3 1/2 times. TransWarp continues to provide the same high performance at a new low price.

A RamFactor "piggyback" memory expansion card will soon be released by Applied Engineering. The new card is available with 1, 2, 3, and 4 megabytes and is user upgradeable in 1 megabyte increments. It attaches to the piggyback connector on RamFactor for a total of up to 5 megabytes. The RamFactor piggyback will include a new version of AppleWorks enhancement software. This software allows you to have up to 5 megabytes of AppleWorks desktop. You can also partition the total RamFactor memory for use as both a RAM disk and expanded AppleWorks desktop. Depending on your RamFactor revision level, you may need to get an enhancement chip set for your card from Applied Engineering. This chip set includes new firmware as well as a new memory controller chip for RamFactor that allows the memory expansion card to work more efficiently. The enhanced chip set costs $20. If you are using a RamCharger with your RamFactor, the memory on both the piggyback and the RamFactor will remain intact when your computer is turned off. The projected price for a 1 megabyte RamFactor expander card is $549. A firm price cannot be given at present because RAM chip prices are on the rise.

GS-RAM and GS-RAM Plus average 3-4 times faster than the nearest competitor. As reported in an earlier "AE Update", GS-RAM and GS-RAM Plus now include ultra-fast disk caching software that supports both ProDOS 8 and ProDOS 16 environments on the Apple 3.5 Drive. Anyone who purchased a GS-RAM or GS-RAM Plus before the caching software was developed can obtain an upgrade for $10.

Applied Engineering's video digitizer will allow an Apple II Plus, IIe or IIGS to capture a video image in a single frame thereby eliminating distortion. The image can come from a NTSC video camera, a VCR or a television monitor's video output. AE's digitizer has the potential for a number of useful applications. One being in the property surveillance industry. Because the video digitizer captures the image in a single frame, moving objects or still objects can be digitized and analyzed for breach of security. The new release date is scheduled for December.

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FutureSound is now available at your local Apple Dealer. For more information, or to order directly from Applied Visions, call (617) 494-5417 ($279.00/MC,Visa,COD).

FUTURE SOUND

CIRCLE 290 ON READER SERVICE CARD

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NEWSPLUS

Apple provides two free upgrades for the IIGS, laundered money wins prize, name changes, new products, and other industry updates

FREE GS UPGRADES

In early August, Apple announced the availability of two free upgrades for the Apple IIGS. They are a new Video Graphics Controller (VGC) chip and, more significantly, a new 128K firmware ROM. These upgrades are available from your local Apple dealer.

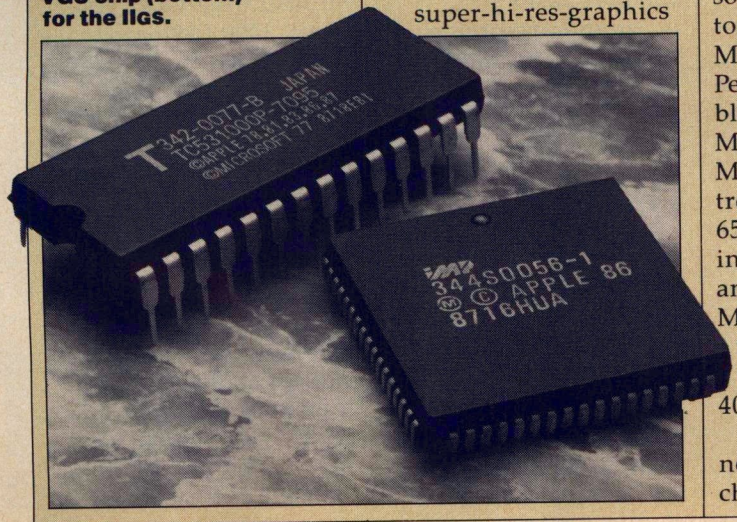
The VGC is responsible for generating all video the GS displays, which includes all IIe/IIc modes and the GS-specific 320×200 and 640×200 super-hi-res-graphics modes. Early units of the GS have VGCs that cause annoying fringing effects in the text and double-hi-res-graphics modes. These effects will disappear after installation of the upgrade chip.

The new ROM (called Version 01) corrects several minor bugs in the Monitor program and the system tool sets. It does not, however, include any additional tool sets—there just wasn't any room for them. The few modest new features include a Monitor command (#) for installing two Classic Desk Accessories called Visit Monitor (for entering the Monitor) and Memory Peeker (for inspecting blocks allocated by the Memory Manager), a Monitor command (Control-N) for putting the 65816 microprocessor into full native mode, and an extension of the Maximum RAM Disk Size option in the Control Panel to 8128K from 4096K.

You can tell if you need these upgrades by checking the first three numeric characters of the serial number on the bottom of the GS. If the number is less than 705, you need both upgrades; if it is from 705 to 724, you need only the new ROM; if it is 725 or higher, you won't require either upgrade.

Kudos to Apple for offering to provide these upgrades for free.

Apple's new ROM (top) and VGS chip (bottom) for the IIGS.



MOONSHINE AND MONEY

Earlier this year, Brøderbund Software held a contest that sought "off-the-wall"anecdotes about how people managed their money. The winning story was about a woman who kept her loot stashed *on* the wall. Valerie Balavage of Monroeville, Pennsylvania, won $1000 worth of Brøderbund software with

ILLUSTRATIONS BY MAX SEABAUGH

NEWSPLUS

her description of her grandmother's unusual bookkeeping methods. Seems that Balavage's grandmother was a moonshiner who turned the walls of her home into her own personal bank. She papered the walls with her illicit earnings and then wallpapered over the loot. If she needed a little cash, she tore out a section and repapered it. To get rid of that sticky wallpaper paste, she washed the bills and hung them up to dry with clothespins. (Hence the phrase *laundering money*.)

WHAT'S IN A NAME?

MicroProse Software, Inc., will be changing its name, as a result of a suit by MicroPro International Corp., which claimed that the name MicroProse was too close for comfort. MicroProse, which publishes simulation software such as Gunship and F-15 Strike Eagle, will change its name by next June, but will be able to use the tag line "formerly MicroProse"on packaging for three years after that. In return, MicroPro, publisher of the venerable word-processing program WordStar, agrees not to attach the word *prose* to any of its products for the next ten years.

BEAGLE BROS GOES GANGBUSTERS

As this issue of *A+* was going to press, Beagle Bros Micro Software (of MacroWorks and Super MacroWorks fame) was about to make a product blitz. The San Diego publisher was readying the introduction of seven new products, and the company appears to have several additional products under development.

The seven products comprise the Time Out series, a set of AppleWorks enhancements that is scheduled for immediate release. The titles in the series include

- DeskTools ($49.95), a set of "desk accessories," such as an appointment scheduler and calculator
- FileMaster ($49.95), a utility for copying and comparing files and disks
- Ultra Macros ($59.95), which replaces MacroWorks and Super MacroWorks in Beagle Bros' product line. Owners of MacroWorks or Super MacroWorks can upgrade by sending in their disks and $10, plus $2.50 to cover shipping and handling.
- SideSpread ($49.95), which prints spreadsheets sideways and is available as an upgrade to FontWorks owners for $10 plus $2.50 handling charges
- QuickSpell ($69.95), a fast spelling checker
- Graph ($89.95), for creating graphs from spreadsheets
- SuperFonts ($79.95), which lets you print with Macintosh typestyles and is also available to FontWorks owners who send in their disks with $30 plus $2.50.

Another upcoming Beagle Bros product, Variety Page, will be a desktop-publishing program that lets you mix text and Print Shop-style graphics. The company hasn't decided on a release date for it yet.

If these products aren't a strong enough statement about the Apple II market for you, look for another set of Beagle Bros products sometime next year. The company may broaden its line with products such as a communications program, a graphics program, an outliner, and a report generator. Watch for further details in upcoming issues of *A+*.

MECC AND UNIVERSITY OF MINNESOTA JOIN FORCES

The Minnesota Educational Computing Corporation (MECC) and the University of Minnesota have formed a partnership to create the Center for the Study of Educational Technology. The center's purpose will be to conduct research on how technology can most effectively be used in schools. Projects will focus on learning materials, teacher education, and school organization. For further information, contact the MECC Administrative Vice President, 3490 Lexington Avenue North, St. Paul, MN 55126; or Office of the Dean, College of Education, University of Minnesota, 104 Burton Hall, Minneapolis, MN 55455.

Incidentally, MECC has announced the 1987 dates for its annual conference. MECC '87 will take place November 13–17 in Bloomington, Minnesota. For details, write to MECC '87 at the St. Paul address above.

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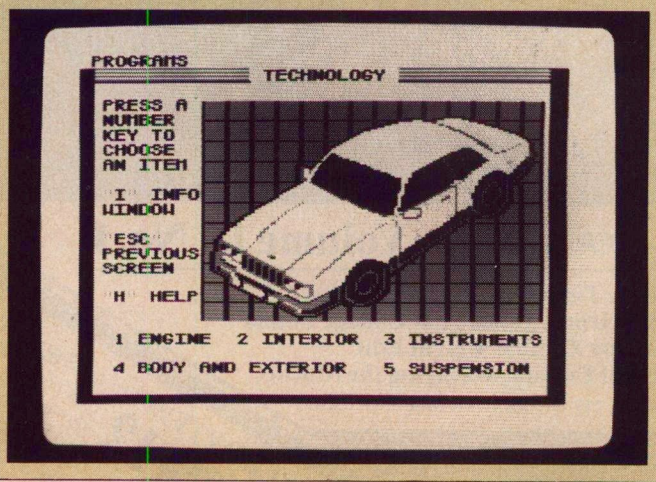
NEWSPLUS

WOULDN'T YOU REALLY RATHER BUY A BUICK?

Buick Motor Division is now distributing a software program, billed as a "non-intimidating introduction to automotive science," for the IIe and IIc to help you choose just the right Buick for you and your family. The program, called Dimension, takes you through an introduction to various high-tech and low-tech options, asks what your basic automobile wish list is, and then suggests which Buick models might be up your alley. It also compares Buick models to the competition and prepares various financing scenarios. Of course, it prints out "a personalized invitation which will be welcomed by the 3000 Buick dealers across the country." As if anyone needed an invitation to get a car salesman's attention.

We can forgive Buick for going a little overboard, since it's obviously a new player in the software arena. But it was eye-opening to see that Buick believes that "Dimension is the most sophisticated program available to home and office computer users"and that "hundreds of thousands of people rely on their computers for everything from making the morning coffee to turning off the lights at night . . . now they can use that same technology to help make their car-buying decisions."

Overstatements aside, if this software sounds like fun, you can obtain it for free (while the supply lasts) by writing to Buick Distribution Center, c/o Adcom, Inc., 6845 Dix Street, Detroit, MI 48209. You must specify that you're using an Apple IIe or IIc, since Dimension is available in a Macintosh format as well.

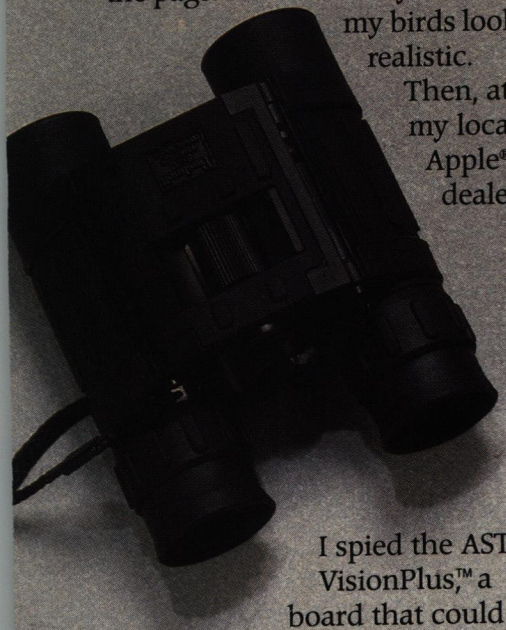


CIRCLE 202 ON READER SERVICE CARD

"Without realistic images, my newsletter was an endangered species."

The copy was vivid, but the images weren't exactly flying off the page. I needed a way to make my birds look realistic.

Then, at my local Apple® dealer,



I spied the AST-VisionPlus,™ a board that could transfer live black and white or color images from a video camera or VCR onto my IIGS™ screen. I bought it immediately.

When I got back home, I plugged the board into my IIGS and connected my video camera to the AST-VisionPlus. Then came the moment of truth.

I posed the camera in full view of my birdfeeder, patiently hoping against hope for the return of the blue-capped flycatching warbler. He did, by jove. And with a quick click of the mouse, I had it on camera. On computer. And on the front page of my newsletter.

Another idea burst into my head. I popped my video cassette "Mating Habits of the Paradise Whidah" into the VCR and spent the better part of the night in

Now, everyone flocks around my ImageWriter® to witness my latest AST-VisionPlus output.

a rapturous flurry, capturing images for Christmas cards, T-shirts, flyers, personal stationery and invitations.

And in the midst of so much stretching, scrunching, recoloring and rearranging the

My Asiatic water parrot looked more like a common ostrich. I wanted to bury my head in the sand.

composition of my AST-VisionPlus images, I discovered my own set of wings. In my mind, I was free as a, well, you know.

Let your visions soar with the AST-VisionPlus. To find the nearest AST-authorized Apple dealer, call us at **714-553-0340.** BBS: (714) 660-9175. FAX: (714) 660-8063.

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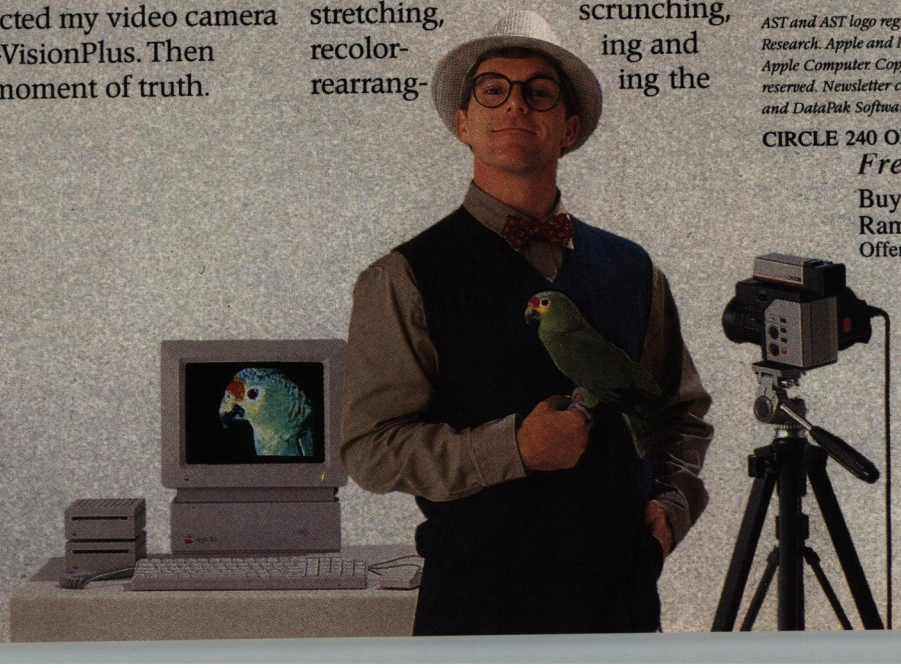

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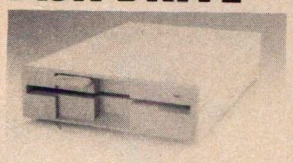

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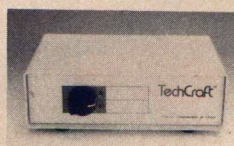

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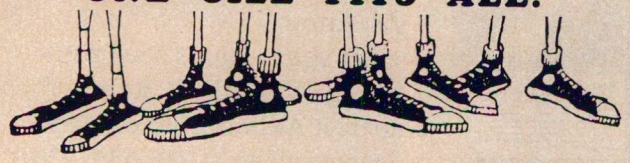

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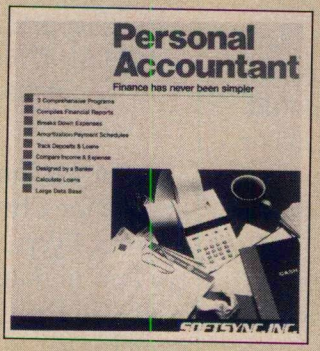
CIRCLE 265 ON READER SERVICE CARD

NEWSPLUS UPDATE

■ Softsync, Inc., has released a new version of its low-cost bookkeeping software, Personal Accountant. The new release, which works on the Apple IIe and IIc, Franklin Ace 2200, and Laser 128, features the "look and feel" of a Macintosh program. Its suggested retail price is $49.95; owners of the older version of Personal Accountant can upgrade to the new one for $9.50. For further information, contact SoftSync at (212) 685-2080.



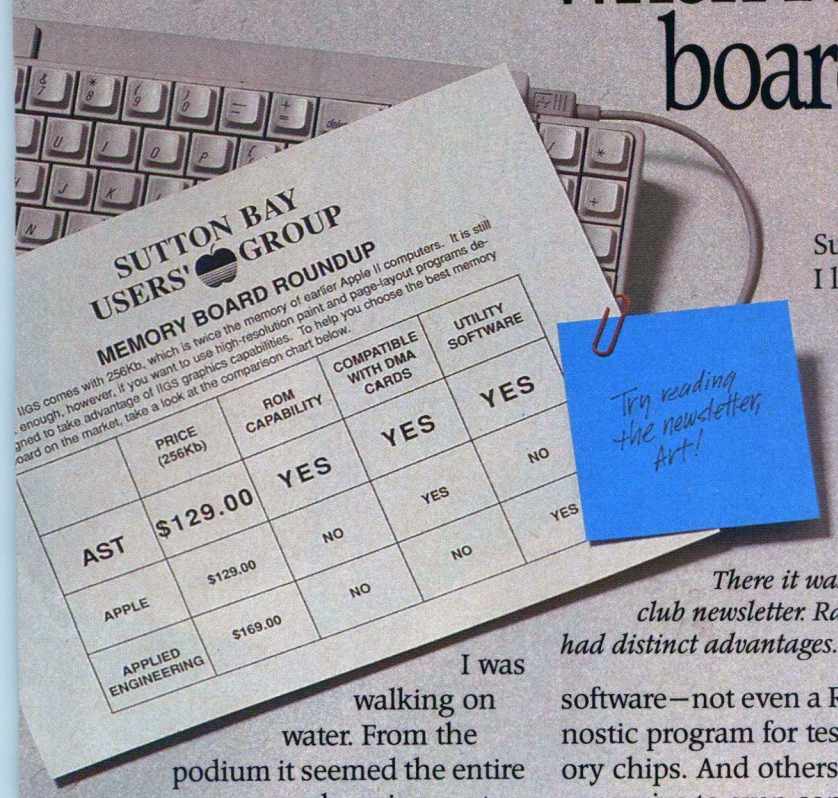
■ K–12 MicroMedia Publishing has a new addition to its line of AppleWorks templates called SchoolWorks. SchoolWorks is a set of templates for teachers, athletic directors, and administrators that includes files for keeping gradebooks, recording book reports, printing progress reports, and writing tests. For administrators, it has attendance, scheduling, and bookkeeping files, among many others. For

coaches, it includes templates for statistics, tickets, rosters, and so forth. The set is available for $125; you can buy one of the three subsets for $55 or two for $99. For more information, call the company at (201) 825-8888.

■ PrintMaster Plus, a printing and graphics program from Unison World, is now available, at a suggested retail price of $49.95. If you're already using an old version of PrintMaster, or a competing product such as Print Shop, you can upgrade for $15. For details, contact Unison World at (415) 848-6270.

■ Scott, Foresman and Company has released a second edition of *AppleWorks: The Program for the Rest of Us*, an introductory book by Michael Sloan. The author updated the book to include information about AppleWorks 2.0. ✚

"Everyone gasped when I said all memory boards were alike."



There it was in the club newsletter. RamStakPlus had distinct advantages.

I was walking on water. From the podium it seemed the entire user group was hanging on to my every word. And then out of nowhere, this guy from the back row asks, "Which memory card would you recommend for my IIGS™?"

The rest is history. And it looks like I am too. Who would have thought the differences in memory boards made a difference?

CIRCLE 245 ON READER SERVICE CARD

Sure enough, I learned that some memory cards are price competitive, but include no software—not even a RAM diagnostic program for testing memory chips. And others are too expensive to even consider.

For the best combination of features at a really unbeatable price, the choice is clearly RamStakPlus.™ It's the only memory card that contains ROM sockets for EEPROMs or EPROMs. Which means you can store your favorite program in ROM memory and it won't disappear when you turn the power off. Plus, the RAM space you conserve can be used to create bigger spreadsheets, database files or reports.

Well, you live and learn. And if you're lucky, you get even. I'm brushing up on my facts for tonight's meeting. You'll never guess who's speaking. The guy from the back row.

Overlooking the basics could have been a costly mistake.

To find out more about the AST RamStakPlus, call **(714) 553-0340,** BBS: (714) 660-9175. FAX: (714) 660-8063. Or visit your local AST-authorized dealer.

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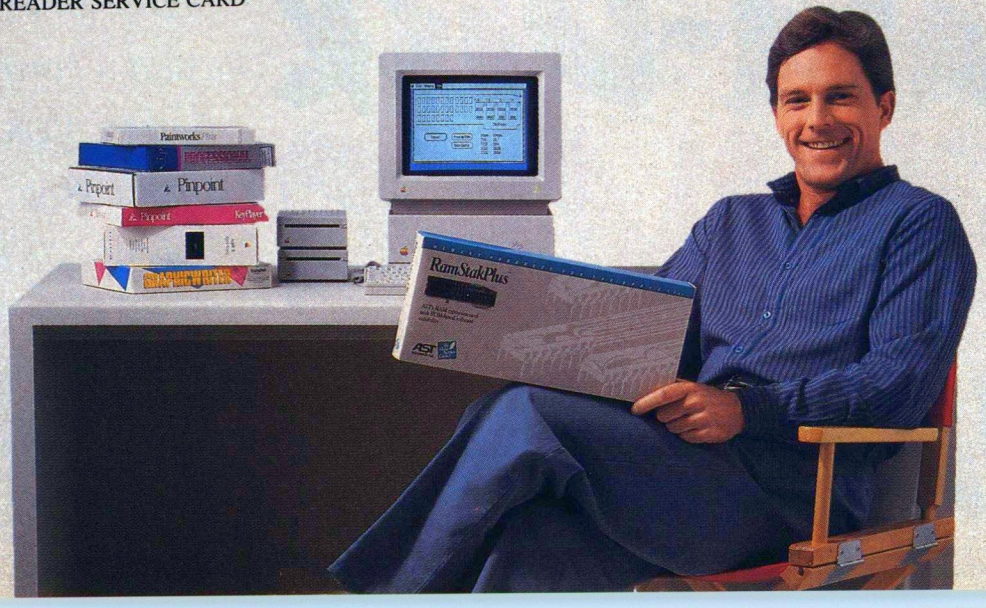

COVER STORY
BY MICHAEL FISCHER

Hard-Disk DRIVES Made Easy

You've finally decided to add a hard-disk drive to your Apple, but you don't know which to choose? To help you out, we review six major brands, and we guide you through the selection process.

Hard-disk drives don't excite you? Once you've experienced the significant increase in computing power and speed they provide, together with the ease of always having the right disk available, you'll probably change your mind. Owning a hard-disk drive may even begin to seem imperative if you have an Apple IIGS. Sophisticated GS programs can take a long time to load, and they require heavy disk access, both processes that a hard-disk drive can speed dramatically.

After you decide to add a hard-disk drive to your Apple II computer, you face many different choices, since many hard-disk drives are available for the Apple II family. Some work only with certain machines. Others can handle only certain operating systems. This article will help you through the selection process.

My viewpoint is that of a user. I discuss hard-disk drives in terms that should make sense to everyone. You won't find discussions of transfer rate, average latency, or skewing factor. These fairly technical measurements are of marginal assistance in selecting a drive. The selection process, particularly for Apple II drives, is much simpler.

The two main reasons for getting a hard-disk drive are convenience and speed. Convenience is having all your programs and documents in one place. You don't need to search through your disk box for the right disks. In addition, a hard-disk drive transfers information considerably faster than a floppy disk can. In short, a hard-disk drive is a very large, very fast disk drive.

Your selection of hard-disk drives depends on which computer you have. The table on the next page shows the units that work with each type of computer. Some hard-disk drives work with every member of the Apple II family.

You can use the space on your hard-disk drive in different ways if the drive manufacturer allows you

PHOTOGRAPHY BY JOHN GREENLEIGH

Hard-Disk/Computer Compatibility

When choosing a hard-disk drive, look here first to see which brands you can connect to your Apple II. Then evaluate the drives based on their individual features described in the article.

COMPUTER	COMPATIBLE HARD-DISK DRIVES
Apple IIc with older ROMs (non-enhanced)	Quark QC-10, Quark QC-20
Apple IIc with newer ROMs (enhanced)	ProApp 10, ProApp 20, Quark QC-10, Quark QC-20
Apple II Plus, IIe, or IIGS	Quark QC-10, Quark QC-20, Sider D2, Sider D4
Apple IIe with Protocol Converter (UniDisk 3.5 controller card)	ProApp 10, ProApp 20
Apple IIGS	ProApp 10, ProApp 20
Apple II Plus, IIe, or IIGS with Apple SCSI card	Apple HD20SC, Apple HD40SC, HyperDrive FX/20, HyperDrive FX/40, ProApp 20S, ProApp 40S
Apple II Plus, IIe, or IIGS with CMS SCSI card	CMS SC20/AIIS, CMS SC40/AIIS, CMS SD20/AIIS, CMS SD40/AIIS

to partition the space. For example, you can use one portion for ProDOS programs while you use another for DOS 3.3 programs. Or you can use one portion of the disk for Apple II ProDOS programs and another for Mac programs. The table "Partitionable Drives" on page 36 lists the various hard-disk drives that you can partition and the types of partitions available.

The first step, then, is to select a drive manufacturer or two, based on what computer or computers you are using and whether you'll need to divide the disk among different operating systems. The next determination is how large a disk drive you should get.

Hard-disk drives come in different sizes, depending on the amount of data each holds, typically either 10, 20, or 40 megabytes. A megabyte is approximately one million bytes of information. A single text character typically takes up one byte of storage. Thus, a 10-megabyte hard-disk drive holds the equivalent of 73 5¼-inch floppy disks, or nearly 13 3.5-inch floppy disks.

Ten million characters may seem like a lot, but you can fill it up fairly quickly. If you are planning to partition the drive among different operating systems, you will generally need a larger disk than if you use it for only one system. In making your size determination, remember that the cost of an additional 10 megabytes on a single hard-disk drive is considerably less than the cost of a second 10-megabyte unit.

Operating Restrictions

Both ProDOS and DOS 3.3 place restrictions on the use of a hard-disk drive. The part of the hard-disk drive devoted to DOS 3.3 must be divided up into different volumes, each with a size of either 140 kilobytes (the standard size of a 5¼-inch DOS 3.3 floppy disk) or 400 kilobytes (the maximum size of a DOS 3.3 volume). This restriction is the main limitation DOS 3.3 imposes, but ProDOS imposes several limitations of its own.

A ProDOS volume currently is restricted to a size of 32 megabytes. Thus, under ProDOS, a 40-megabyte drive must be divided into two 20-megabyte volumes, or one 32-megabyte and one 8-megabyte volume. The other restriction of ProDOS is the number of files it permits in the root directory. You cannot place more than 51 files in this directory of a ProDOS disk. A subdirectory, which can be one of the files in the root directory, can contain as many files as you like, however.

With a 140K or 800K floppy disk, you'll rarely come up against this limit because you'll run out of disk space well before you create that many files. With a 10-megabyte or larger volume, though, you may easily have more than 51 files on the disk. The solution is to arrange the files carefully, using logically designed subdirectories, so that no more than 51 files are in the root directory.

Certain ProDOS programs also place a restriction on the number of files in a subdirectory the program can recognize in its disk operations. If you notice that a filename does not appear, even though you know it is on the drive, you probably have a program with this problem.

Copy-Protection

Copy-protection is another consideration in hard-disk drive organization. You cannot put a copy-protected program onto your hard-disk drive, with three exceptions:

1. You can use some copy-protected programs on a hard-disk drive with a special program. The best known of these programs is Catalyst from Quark. Catalyst works only with programs that follow the Catalyst copy-protection standards.
2. You can install some copy-protected programs, such as Sensible Speller, on your hard-disk drive even though you cannot copy the program onto another floppy.
3. You can copy some copy-protected programs to your hard-disk drive. When you start that particular program, it requests that you place the original disk in one of your floppy drives.

Finally, you should give some consideration to how you will select from the programs on your hard-disk drive. Selecting programs from a menu is usually

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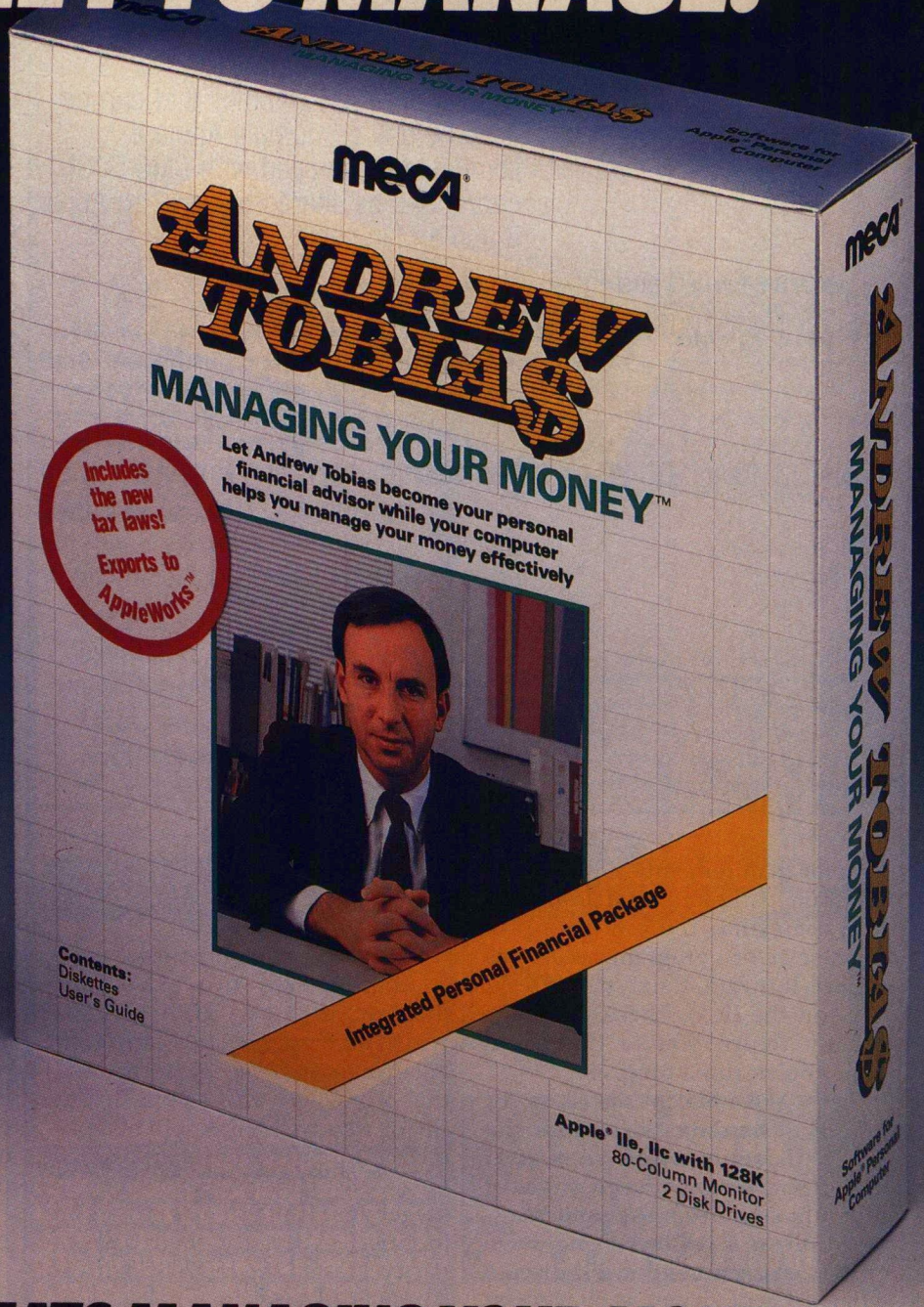

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Partionable Drives

Some hard-disk-drive makers let you divide up the disk space into partitions. This chart shows which drives accommodate partitioning.

DRIVES	TYPE OF PARTITION
Apple HD20SC and HD40SC	None
CMS SC20, SC40, SD20, and SD40	Different ProDOS volumes that can be used by one or multiple Apple II computer(s) equipped with CMS SCSI cards. Can be shared between an Apple II and a Macintosh.
HyperDrive FX/20 and FX/40	None
ProApp 10, 20, 20S, and 40S	Can be shared between an Apple II and a Macintosh. The Apple II portion can split between the DOS 3.3, UCSD p-System, and ProDOS operating systems.
Quark QC-10 and QC-20	Can be shared between an Apple II and a Macintosh computer. The disk can be divided into multiple volumes of varying sizes for use by either the Macintosh or Apple II.
Sider D2, D4, and C46	The disk can be divided into multiple DOS 3.3 areas (either 140K or 400K in size), four CP/M volumes, four UCSD p-System volumes, and two ProDOS volumes.

simpler than remembering the full program pathname and issuing a Run command. You can use a program-selector program, such as ProSel, RunRun, Catalyst, or DeskTop (on the IIGS). These programs usually return you to the menu after you've run a program.

Let's take a look at the six major brands of hard-disk drives for the Apple II family. There is a great deal of similarity between drives of different sizes from the same manufacturer, so I reviewed one drive only from each vendor. I'll discuss what sorts of drives each vendor makes and describe the size and noise level—factors to consider when selecting a drive. I'll also list what type of indicator lights each drive has, an important feature for many people. Indicator lights can tell you if the system is hung up or let you know that everything is proceeding smoothly.

Apple

Apple makes two SCSI hard-disk drives (see "SCSI Drives," which accompanies this article, for an explanation of the term *SCSI*) that work with the Apple II Plus, IIe, or IIGS with an Apple SCSI interface card. The units are the 20-megabyte HD20SC and the 40-megabyte HD40SC. The drives are identical except for their disk capacity. I tested the HD20SC with an Apple SCSI card.

The HD20SC is one of the larger units tested in terms of the amount of desktop space it requires. It measures 10 inches wide by 10½ inch deep and 3 inches tall. It is about midrange among the units in terms of fan noise, and it also makes a chirping sound whenever the drive head moves from one track to another. A red light on the front panel indicates drive activity.

You can place the Apple SCSI card in any slot of an Apple IIe or IIGS if you are going to connect one or two drives to it. If you are going to connect three or four drives, you must install the card in slot 5. On the Apple IIGS, doing so prevents use of the built-in Smartport for connecting 3.5-inch drives.

Each drive in any SCSI system, and the SCSI card itself, must have a unique "priority" number (see "SCSI Drives"). You set the priority of the Apple HD20SC by pushing a wire into a small hole in the back of the drive, and you change the SCSI-card priority by means of a jumper on the card itself.

This drive doesn't have any unique features, but if the Apple label is important to you, it might be worth the extra price you pay.

CMS

The CMS family of SCSI hard-disk drives requires a CMS SCSI-interface card. The Apple SCSI card does not work with them. You have to follow the documentation closely to properly configure the card, unless it comes preconfigured. The price you pay for the versatility of the CMS SCSI card is its configuration complexity. You can connect two CMS drives or two partitions on the same CMS drive to each SCSI card. I tested the 40-megabyte CMS S40.

One distinguishing feature CMS provides is the ability to configure the SCSI card to permit read-only access to a drive or partition. Your computer can then read a file from the hard-disk drive but not modify or delete the file. Read-only capability is useful when two or more computers are sharing files on one hard-disk drive.

The read-only capability can be troublesome, though. If you start AppleWorks from a read-only volume, for instance, you will find yourself in an endless loop. AppleWorks will request that you remove the write-protection from the volume on which it is located, something you cannot do.

Besides the CMS S40, the company also sells a 20-megabyte unit. Although CMS makes higher-capacity units, they are not very prac-

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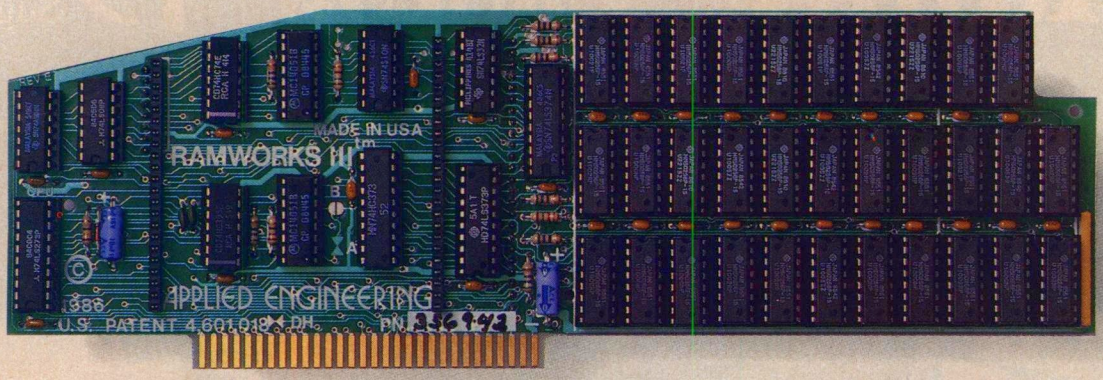

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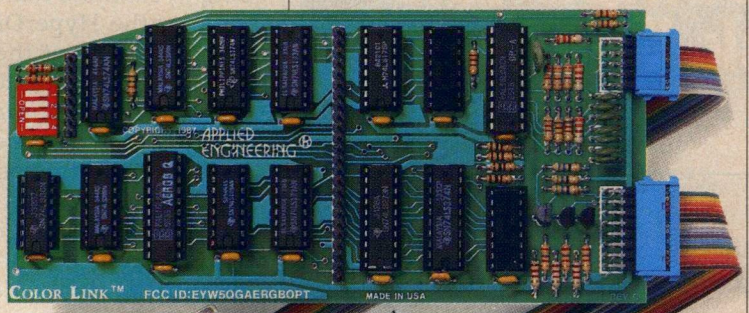

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tical for an Apple II, in view of ProDOS's volume-size restriction.

The CMS drive is the quietest of all the hard-disk drives I tested. You hear just the noise of a fairly quiet fan. It has two lights on its front panel: A green light shows that the unit's power is on, and an amber light indicates that disk access is occurring. The unit is box-shaped (10 × 6 × 5.5 inches), with a retractable carrying handle—the editors at *A+* call it the CMS lunchbox. CMS also sells a stack-shaped unit that you can stack above or below other components.

HyperDrive FX

General Computer manufactures the HyperDrive FX in 20- and 40-megabyte configurations. The company is known in the Macintosh world for having created the first fast internal hard-disk drive for the Macintosh. General Computer also has an external SCSI hard-disk drive, the HyperDrive FX, that works with the Apple II Plus, IIe, IIGS, and Macintosh.

The HyperDrive FX/20 is a 20-megabyte unit resembling a fairly thick book placed upright on its spine. The unit is 8 inches high, 13 inches long, and 4 inches wide, with a handle built into its top. The HyperDrive FX is somewhat noisier than the CMS drive, but the only noise comes from the fan. It has a single red light on its front panel that indicates when disk access is occurring.

You must use the Apple SCSI card with the HyperDrive FX. To install the hard-disk drive, you place the SCSI card in your computer, connect a SCSI-system cable between the card and one port on the HyperDrive, and place a SCSI terminator on the other port on the back of the HyperDrive. If you are going to use more than one HyperDrive (or the HyperDrive and another SCSI unit) at the same time, you will also have to check the SCSI identification number of each unit. The HyperDrive comes with a utility program that permits you to check and change this value.

General Computer includes Apple's Backup II program (see "Hard-Disk File-Maintenance," which accompanies this article) with the HyperDrive FX, as well as a hard-disk-drive manager program called FX Manager. FX Manager lists all devices on the SCSI bus, tests or initializes the hard-disk drive, and checks or changes SCSI identification numbers.

ProApp

The ProApp hard-disk drive is a versatile drive, working with the Apple IIc, IIe, and IIGS as well as the Macintosh. It is a non-SCSI unit that comes in 10- and 20-megabyte sizes. ProApp also makes a SCSI 20-megabyte model. The non-SCSI unit is 3 inches tall, 6½ inches wide, and 10 inches deep. At this writing, ProApp units came with an external power supply, but new models under development have a built-in supply. I tested a 20-megabyte unit with an external power supply, which lowers the heat in the drive unit itself. The power supply fits nicely on the floor, much like the IIc power supply.

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The fan noise of a ProApp is about midway between that of the CMS drive and the HyperDrive FX. The drive also makes a fairly quiet chirping sound whenever disk access occurs. There are three lights on the front panel. A green light, labeled ready, blinks when the unit is first powered on and remains on when the unit reaches its ready state. A red light, labeled disk, shows when disk access is occurring. The third light is labeled busy. If any of the lights blink after the drive has reached the ready state, something is wrong with the drive.

The standard ProApp connects to an Apple II Plus, IIe, or IIGS equipped with either a UniDisk 3.5 drive controller card (Protocol Converter), or to the disk port on an enhanced Apple IIc or IIGS. If you connect the drive in a chain, it must be the last drive in the chain. The SCSI model uses an Apple SCSI card.

The ProApp unit can handle three different Apple II operating systems: DOS 3.3, ProDOS, and the UCSD p-System (Apple version 1.3). You can also have a coresident Macintosh partition. Utilities and the three operating systems come with the drive. The version of DOS 3.3 that comes with the ProApp, called RigiDOS, is a modified DOS and is not guaranteed to be compatible with all DOS 3.3 programs. I was unable to find any major program that did not work with the unit. The Chooser utility permits you to specify which operating system will be active when you start your ProApp and also allows you to switch between operating systems.

The ProApp Company has been acquired by an IBM hard-disk-drive manufacturer named Logic Array, which is continuing to manufacture the drives under the ProApp label.

Quark QC

The Quark QC works with the Apple IIe, IIc, and Macintosh and can handle both the ProDOS and UCSD p-System operating systems. You can partition the drive into as many as 63 different volumes, with up to four different volumes active at one time. Each volume on the QC drive has a specified size, name, and operating system and certain access restrictions. The three access levels are public, group, and private. You specify for each access level whether access is permitted and, if so, whether access is read only or read, write, and delete.

The QC-20 drive I evaluated contained 20 megabytes of storage and had the largest physical dimensions of any of the drives I tested. (The QC-10, which is the same physical size, contains 10 megabytes of storage.) The drive is 14 inches wide, 9 inches deep, and 4 inches high. The top of the unit has no ventilation slots, so you can easily put the QC on top of your computer and put your monitor on top of the drive. The Quark QC's noise level is about the same as that of the ProApp. The drive has a single red light on its front panel that shows when disk access is taking place.

Installation of the Quark QC varies with the computer setup. The steps are not difficult, and the

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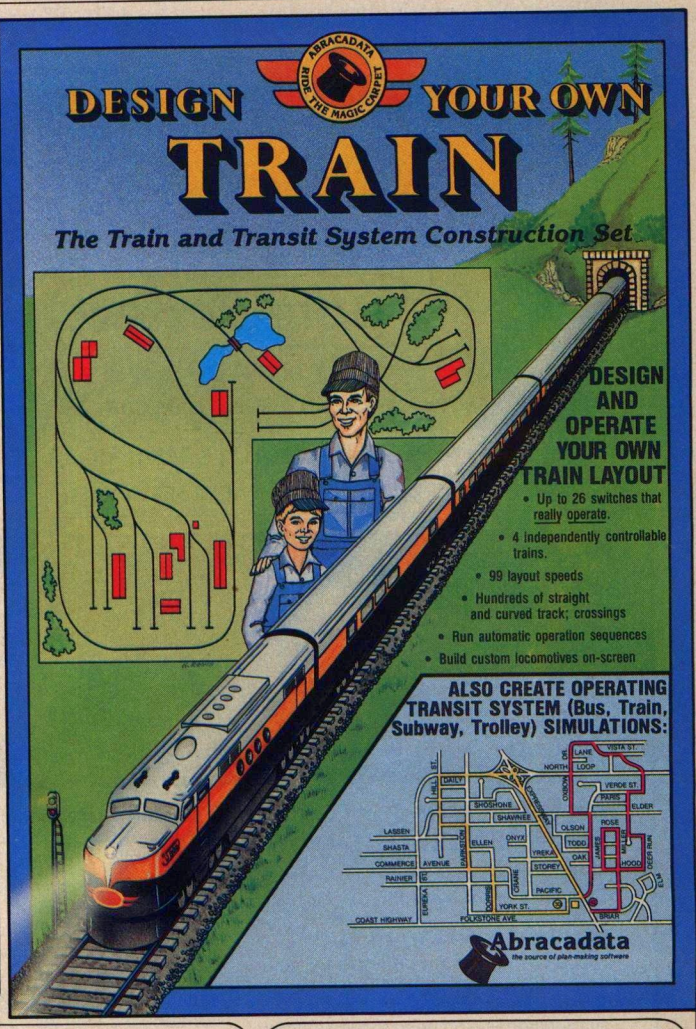

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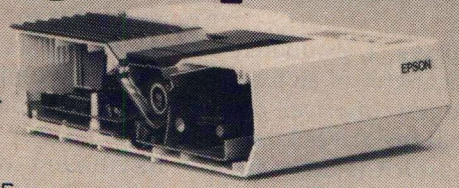

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drive comes with all the converter cables you'll need. This drive is the only one I tested that works with whatever form of floppy-disk interface you have on your computer, even with the old Disk II interface card. The Quark drive does not boot automatically; i.e., you cannot turn on your hard-disk drive and your computer and have the system start from the hard-disk-drive driver on it. All the other drives reviewed permit automatic booting.

I could not get the Quark to work with the Apple IIGS through the Smartport connector, although it does work with the IIGS with a Disk II controller.

Quark Peripherals is no longer manufacturing Quark QC drives, although Sun Remarketing is distributing them. I included this drive in this article because it works with any Apple IIc (enhanced or not) and with any Apple IIe, even without a Protocol Converter card.

Sider

The Sider is manufactured by First Class Peripherals, a division of Xebec. It resembles a book placed upright on its spine and measures 7 inches high by 16 inches deep by 3½ inches wide. The drive is slightly noisier than the ProApp. It has a single red light on its front panel that shows drive access.

The Sider connects to an Apple II Plus, IIe, or IIGS through its own interface card, which comes with the hard-disk drive. You can place the card in any available slot, although, for automatic booting, you should put it into slot 7. Physical installation requires 20–30 minutes and is a bit more difficult than installation of the other hard-disk drives in this article.

The Sider can handle more Apple II operating systems than any other hard-disk drive can—ProDOS; UCSD p-System; DOS 3.3; and several versions of CP/M (Microsoft Softcard, Applied Engineering CP/AM; and PCPI Versions 1.5, 1.6, and 2.0). First Class Peripherals supplies utilities for each of the operating systems, but you must supply the actual operating-system software (and the interface card in the case of CP/M).

The need for backups with a hard-disk drive is critical: Although a hard-disk drive rarely fails, the consequences of a failure are great.

The Sider documentation provides the greatest amount of technical information and describes how to customize the start-up operation within each of the four different operating systems. A menu-style program selector for the ProDOS portion of the drive comes with the system software.

The B-Sider, a tape backup unit, provides high-speed file, volume, and drive-image backups of your drive. First Class Peripherals supplies a backup program that works with the B-Sider and with other backup media such as 3.5- and 5¼-inch floppy disks. The program does not provide incremental backup capability.

Which Drive for You?

The compatibility list accompanying this article names the hard-disk drives that work with each member of the Apple II family. Note that each manufacturer offers several different drives. Once you decide that you need (or at least want and can afford) a hard-disk drive, you should determine from the list and tables with this article (through page 49) the drives that can work with your setup. Next you should check which ones can handle the operating systems you want to place on your drive. Then look back at the descriptions in this article of the individual products. Your final decision then becomes a matter of drive capacity.

Happy driving. ✚

Michael Fischer works in the field of court administration in California and writes about Apple computers. His latest book is Apple IIGS Technical Reference, *from Osborne/McGraw-Hill.*

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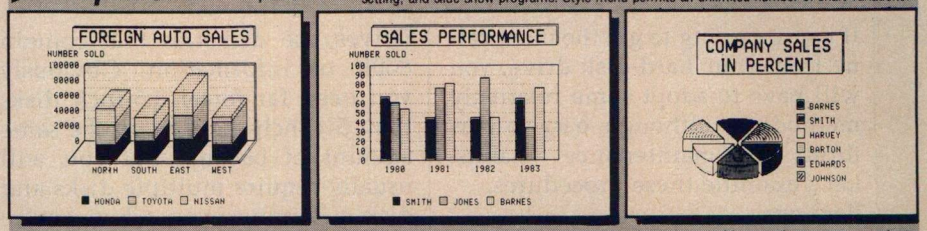

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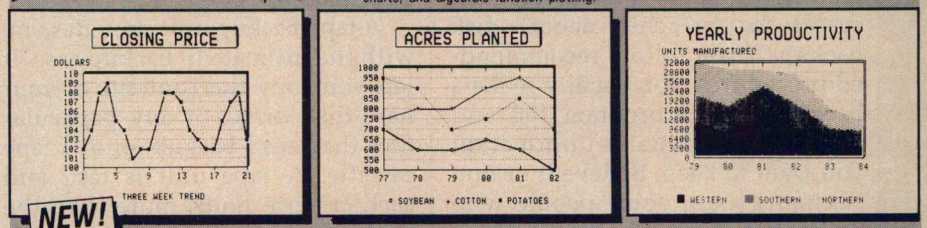

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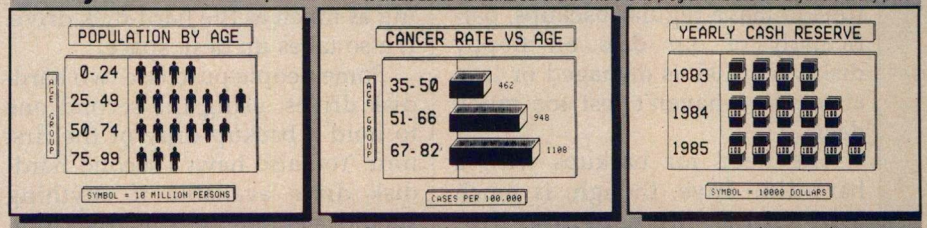

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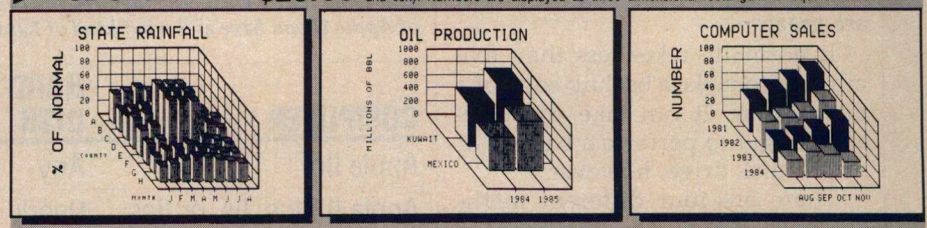

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Hard-Disk File-Maintenance

If you are going to get the most value from your hard-disk drive, you will have to adopt some relatively methodical, although easy-to-perform, file-maintenance habits. Let's examine these procedures.

Backups

Nearly any computer-program manual or book for novices discusses (or preaches about) disk backup. If you follow recommended procedures, you usually make a backup of every program disk and data disk that contains information you want to keep. Believe it or not, I actually know some people who do so. But many of us, myself included, get lazy and don't take the time to make regular backups, particularly of our data on floppy disks. If a disk is damaged or lost, at least we haven't lost too much data.

The need for backups with a hard-disk drive, though, is much more critical. My hard-disk drive contains not only the programs that I commonly use, but also all the data I've created with the programs. If the hard-disk drive should become unreadable, I would lose *every* important document I had, not just the several documents that might reside on a floppy disk. The bottom line is: Although a hard-disk drive rarely fails, the consequences of a failure are great.

It normally takes less than five minutes to make a backup copy of a floppy disk. It can take considerably longer to perform a backup of a hard-disk drive, however.

There are four different methods with which you can make a backup of your hard-disk drive. You can use the 5¼-inch drive that most of us have on our Apples. Bear in mind, though, that the disks that work in the 5¼-inch drive hold only 140 kilobytes of information. You will need to have many disks and swap them often, if you use 5¼-inch floppy disks for backup.

The UniDisk 3.5 and Apple 3.5 Drives use diskettes that contain 800K of information. Obviously you need far fewer 3.5-inch disks than 5¼-inch disks to do the same amount of backup, but you will usually require multiple disks and disk swapping even when you're using the 3.5-inch drive.

Tape Backup

A tape backup unit provides you with the ultimate in backup ease. It lets you copy the contents of your hard-disk drive, or any particular files that need backup, onto a tape cassette. A tape unit is fast, and each cassette holds more than the contents of a hard-disk drive. But a tape unit is expensive, often costing as much as the hard-disk drive. It also takes up desk space.

Some people purchase two hard-disk drives, using the second one to hold a backup copy of the first unit. You also have a second hard-disk drive available if anything should happen to the first unit. The second unit holds only the same amount of data as the first unit, though, preventing you from making several backups, as you can with a removable tape unit.

You can use a tape backup or second hard-disk drive only if your system permits you to connect more than one drive. The table below shows whether a particular setup permits a second unit and whether a tape unit is available.

When making a backup, you can use any program that permits copying of files. FID, which comes with the DOS 3.3 System Master, performs this function in the DOS 3.3 operating system. If you are using Pascal, you use the Filer. In ProDOS, you have several backup options. You can use the ProDOS Filer that comes with the Apple IIe or the System Utilities that come with the Apple IIc and Apple IIGS. You can also use other ProDOS file-management programs such as DeskTop (on the IIGS), Catalyst, or CatDoctor (part of the ProSel package). Each of these programs requires you to select files to be copied and can copy only as many files at once as will fit on a single backup disk.

A more useful program, available only for ProDOS files, is Backup II from Apple Computer. This program allows you to copy either the entire hard-disk drive, selected subdirectories on the hard-disk drive, or every file on the hard-disk drive that was modified since the last backup. This last type of backup is called an incremental backup and is the fastest

This table shows what other devices you can add to your system, depending on what kind of Apple II you have and what kind of hard-disk drive you have attached to it.

COMPUTER	HARD DISK	TAPE	2ND DRIVE
Apple IIc	Any	No	No
Apple II Plus, IIe, or IIGS	Quark	No	Yes*
Apple II Plus, IIe, or IIGS	Sider	Yes	Yes
Apple IIe with a Protocol Converter (UniDisk 3.5-inch controller card) or IIGS	ProApp	No	Yes*
Apple IIe or IIGS with SCSI card	Any	Yes	Yes

* A second unit requires another disk controller or Protocol Converter card.

way of ensuring that you always have an up-to-date backup of files on your disk. Backup II automatically prompts you for additional floppy disks when the current one is filled.

Archiving and Deleting

Even though a hard-disk drive has lots of space, you will want to transfer files that you are no longer using from the hard-disk drive to make room for more-current files. You can check the date of the file's last use (if you are in ProDOS or the UCSD p-System) to determine if the file is a likely candidate for archiving. At the same time you're archiving files, you should check if your hard-disk drive contains files that you no longer need at all.

Reorganizing

Besides organizing and archiving files for your convenience, you should also consider how the drive itself electronically organizes the files. Each time you modify a file on your hard-disk drive, you run the risk of fragmenting the file. ProDOS normally attempts to save a disk file in one location on the drive. If it doesn't find sufficient room, it places different parts of the file in different locations. When you increase the size of a file, it will no longer fit in its original location on the disk, so ProDOS must split it up. A file that is split into several parts takes longer to access than a similar-size file in one piece.

A software program called a disk reorganizer takes every file on a disk and places it in a location where it can all fit in one piece, taking all the small pieces of empty disk space and combining them into one big space. You should make a full backup of your hard disk before you use this program. If the program is interrupted, the files on your disk can become hopelessly scrambled. Beachcomber (part of the ProSel package) is one such disk reorganizer.

If you do not have a disk reorganizer, you can perform the same process, albeit in a more tedious and time-consuming manner, by copying every file from your hard-disk drive to a floppy disk, erasing all the files, and then recopying the files back. This process is especially tedious if you have many subdirectories on the hard-disk drive.

Michael Fischer

SCSI Drives

If you hear a friend say she has a "scuzzy disk drive," she doesn't mean it's time to send that drive to the cleaners. *Scuzzy* is merely the way to pronounce the initials SCSI (Small Computer Systems Interface), which denote a standard way of connecting devices to a microcomputer. This method involves a cable of 50 wires, each of which contains a specified signal, which connects a SCSI peripheral device to a SCSI port on a computer. On an Apple II Plus, IIe, or IIGS, you install the SCSI port by means of an interface card you place in any slot except slot 3.

The SCSI interface is a parallel interface. All eight bits of data that comprise a single character travel over the cable at once, on eight separate wires. By contrast, the bits in a serial interface travel one at a time on a single wire. Assuming the signals all travel at the same speed, it takes a serial interface eight times as long as a parallel interface to transmit a character.

The SCSI standard did not just come from nowhere. Its predecessor was SASI, which stands for Shugart Associates Standard Interface. Shugart Associates, a hard-disk-drive manufacturer, developed SASI in the late 70s. This standard is used in the Sider hard-disk drive.

The American National Standards Institute (ANSI) modified SASI to add extra features and then issued it as standard X3T9.2, called SCSI. Unfortunately, nothing remains standard once it gets out into the real world. Apple has modified SCSI in two respects:

1. Its connector has only 25 signals or wires, not the full 50 signals (25 of which are ground) that are part of the SCSI standard.
2. It provides a different method for implementing termination resistors (discussed below).

The differences between Apple SCSI and standard SCSI account for the incompatibility between the CMS SCSI drives and cards and the other SCSI drives and cards that follow the Apple II modifications.

Seven Up

When you set up a SCSI port on your computer, you can add up to seven devices (the SCSI card itself being one device), subject to certain restrictions. Each device must have a separate priority number (from 0 to 7). The port on the computer itself must also have a priority number different from those of all devices on the line. The Apple II SCSI card is set up to be device number 7 unless you modify it. The method of changing device numbers varies with the peripheral device. Some, like the Apple HD20SC, have a rotating wheel that displays the device number. Others, like the CMS 40S, use a row of tiny switches, called DIP switches, to set the number. And some, like the HyperDrive FX/20, require the use of a software program to change the number.

The priority number in SCSI is more than just a number. The higher the value, the more attention the SCSI controller pays to the unit. Thus, SCSI unit 7 gets top priority when more than one unit is seeking to use the SCSI line, whereas SCSI unit 0 can use the line only when all other units are idle.

On the Apple II Plus, IIe, and IIGS, the ProDOS operating system restricts the number of SCSI hard-disk drives that you can connect to any SCSI card. Any card in slots 1, 2, 4, 6, or 7 can have two SCSI drives attached to it. A card in slot 5 can have four drives, as long as slot 2 does not contain any drives.

The Terminator

The 25 to 50 wires in the SCSI line each contain an electrical signal. You must observe several restrictions to prevent loss of signal strength or interference of one part of the signal with another. You are limited to 20 feet of cables among all the units, and one or two terminators must be attached to the line. The effect of the terminator is to reduce noise, or signal interference. One terminator is necessary if your SCSI system is restricted to one SCSI device other than your computer and the total cable length is less than 10 feet. Otherwise, two terminators are required. Terminators are small and relatively cheap ($30 list for the Apple terminator) and do not count as a SCSI device.

Michael Fischer

Apple II Hard-Disk Comparison Chart

HARD DISKS	SIZE (MB)	PRICE	IIc	II Plus or IIe	IIGS	Mac	SCSI	Pro-DOS	DOS 3.3	Pas-cal	CP/M	WARRANTY
APPLE COMPUTER, INC.												
HD20SC	20	$1508		■	■	■	■	■				90 days; extendable[3]
HD40SC	40	$1999		■	■	■	■	■				
CMS[1]												
SC20/AIIS	20	$895		■	■	■	■	■				
SC40/AIIS	40	$1595		■	■	■	■	■				1 year
SD20/AIIS	20	$895		■	■	■	■	■				
SD40/AIIS	40	$1595		■	■	■	■	■				
GENERAL COMPUTER CORPORATION												
HyperDrive FX/20	20	$1229		■	■	■	■	■				1 year; extendable[4]
HyperDrive FX/40	40	$1829		■	■	■	■	■				
LOGIC ARRAY												
ProApp 10	10	$715	■	■	■	■		■	■	■		1 year
ProApp 20	20	$897	■	■	■	■		■	■	■		
ProApp 20S	20	$715		■	■	■	■	■				
ProApp 40S	40	$1235		■	■	■	■	■				
SUN REMARKETING												
QC-10	10	$795	■	■	■	■		■	■			90 days
QC-20	20	$895	■	■	■	■		■	■			
FIRST CLASS PERIPHERALS												
Sider D2	20	$695		■	■			■	■	■	■	Variable; check with your dealer
Sider D4	40	$995		■	■			■	■	■	■	
Sider C46[2]	40	$1795		■	■			■	■	■	■	

[1] The CMS SC drives come in a cube shape; the SD drives are rectangular.
[2] Comes with 60-megabyte tape backup unit.
[3] Up to 3 years with AppleCare
[4] 3 years with HyperCare

Souping Up Your Sider

The most popular Apple II hard-disk drive for the past several years has been the Sider from First Class Peripherals. It's beginning to show its age, however, since it's not quite as fast as the newer SCSI-type drives, and it still insists on booting up under DOS 3.3, even though ProDOS is clearly the operating system of choice for high-capacity drives.

Happily, Advanced Tech Services has developed the perfect rejuvenation pill for the Sider: a Host Adapter Firmware ROM that configures the Sider (10 megabytes) or Sider II (20 megabytes—now called the Sider D2) as a single ProDOS volume. It also increases the effective data-transfer rate between drive and computer by 20–25%, making the Sider somewhat faster than SCSI drives. The data-transfer rate is highest when you're using a GS or an accelerated II Plus or IIe.

Another important feature of the ROM is its ability to recognize and work with a second Sider daisy-chained to the first. In addition, the formatting program that comes with the ROM checks for bad blocks while formatting the Sider and assigns any it finds to a dummy file so they won't interfere with your own files.

Special versions of the ROM are also available for the new 40-megabyte Sider and the old Xebec Trustor 30. (The standard ROM works with the Trustor 10.)

The price of any version of the ROM is $49.95. You can reach Advanced Tech Services at P.O. Box 920413, Norcross, GA, 30092; (404) 441-3322.

Gary Little

Parking Your Drive

When I got my hard-disk drive, one of the items on the Utilities menu referred to "parking" the drive's heads. I didn't know what that meant, but, ever adventurous, I tried it out. The drive whirred and clicked a little, and then a message appeared on my screen saying I could now safely power down the drive. Naturally, I proceeded to run this utility each time I used the drive.

Here's what "parking heads" is all about: Inside a hard-disk drive you'll find one or more spinning, rigid disks, containing the information stored in the drive, and one or more heads, electromagnetic devices that read information stored on the disks and write it to the

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disks. The disks spin rapidly, and the heads ride a fraction of an inch above the disks. If the heads actually touch a disk, particularly when it is spinning, the information on the disk can be damaged or destroyed.

Every time you physically move your hard-disk drive, you run the risk of having a head crash into a disk, damaging it and wiping out your precious data. In addition, your drive is in danger every time you turn it on. Nearly all drive power failures occur at power-up—when you turn on your drive, a power surge can damage the data under the drive's heads.

On the outside of any disk inside a hard-disk drive is an area that the drive doesn't use to store data. When you park your drive's heads, you cause the stepping motor inside the drive to move the heads so that they are located above this unused area of the disk. If the disk head nicks the disk at this location or if power surges through the drive head while it is over this portion of the disk, your data is likely to remain safe.

Michael Fischer

Products and Manufac

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(408) 996-1010

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Apple II SCSI Card with SCSI System Cable and SCSI Cable Terminator—$209

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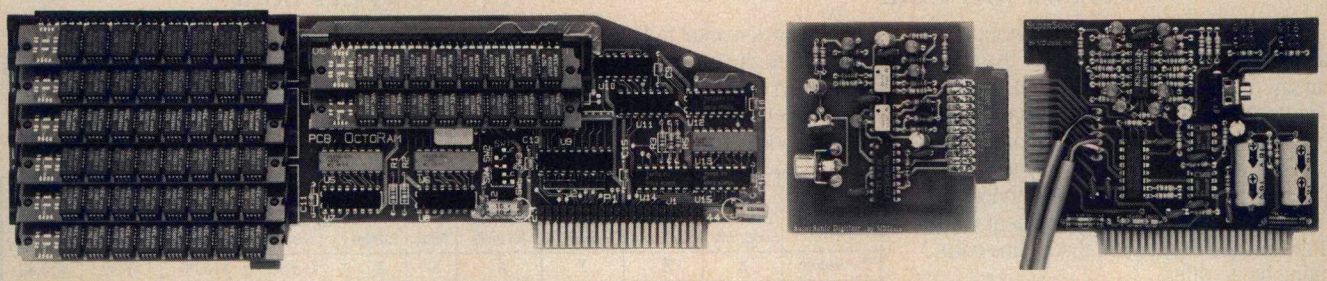
Anyone Else?

The hard-disk drives this cover story describes in detail aren't the only ones available for the Apple II. They were the only ones we were able to obtain for this article, however. Peak Systems of Austin, Texas ([512] 329-1020); Sunol Systems of Pleasanton, California ([415] 484-3322); and Infax, Inc., of Decatur, Georgia ([404] 981-4520) for instance, each have Apple II hard-disk drives but weren't able to send us evaluation units early enough for inclusion in this article. Chinook Technology of Longmont, Colorado ([303] 449-1207) had a 20-megabyte drive under development at this writing, which the company said might be available by the time you read this story. Other vendors—including Corvus Systems and AST Research—that might seem to be notable exclusions didn't appear because they are no longer actively seeking Apple II customers for their hard-disk drives and asked to not be covered in this story.

Lisa Raleigh

OctoRam Digitizer SuperSonic



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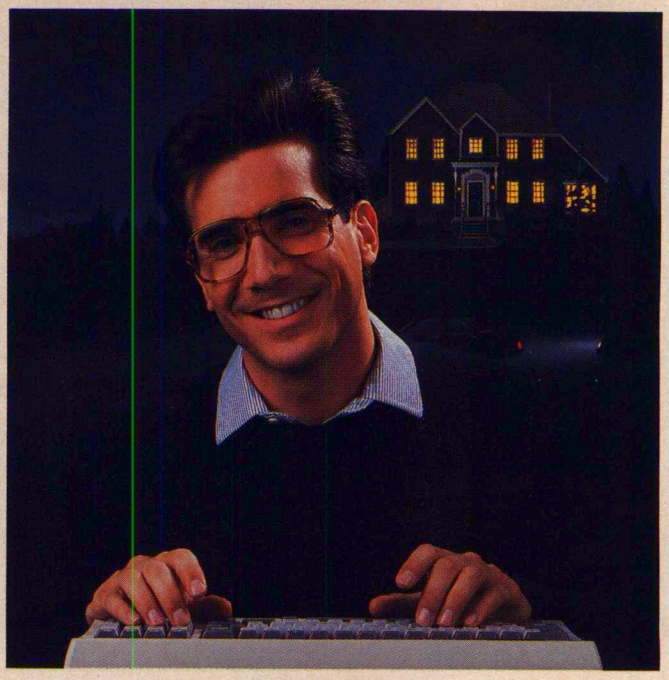

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See us at booth #521

After 7 years of gripes, complaints and suggestions from more than 50,000 DB Master® users ...

... you bet I know what you want in a data base manager!

Sure DB Master was great back in 1980 when we first introduced it. After all, it was the first serious data base management program for the Apple //. In fact, two years later, Softalk magazine reported that "many Apple dealers are selling a copy of DB Master with every computer they sell." And yes, we fixed it and added to it and improved it over the years, as we watched all of the serious software development move to other computers.

But when the time came to improve the program one more time, we decided it just wasn't worth it. If we were going to the trouble, then the only thing to do was throw it away, and start over. After all, we've learned a lot in the last seven years, and the Apple // has improved a lot, too. This time we'd really do it right.

So we set out to write the ultimate data base manager for the Apple //!

It had to be powerful, with features and capabilities exceeding any other program you could find.

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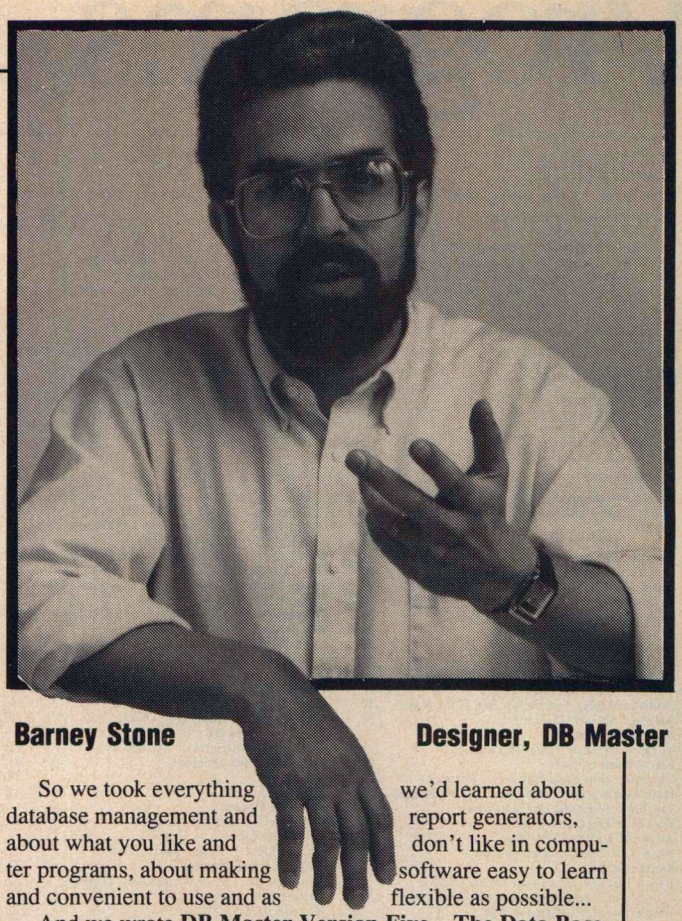

Barney Stone **Designer, DB Master**

So we took everything we'd learned about database management and report generators, about what you like and don't like in computer programs, about making software easy to learn and convenient to use and as flexible as possible...

And we wrote **DB Master Version Five—The Data Base Manager You've Always Wanted for Your Apple // !**

You're going to love it!

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Take advantage of DB Master's higher power, capacity, and superior report generator. DB Master can convert your AppleWorks data base files to DB Master files. It's easy!

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All the features of Version Five, plus multi-file relational capabilities, keystroke macros, and much more! Call or write for information.

Specifications

Hardware Requirements:
Apple //e (Enhanced, with extended 80 column card), //gs, //c or Laser 128. At least two 5 1/4" floppy disk drives, or any combination of 5 1/4" and 3 1/2" floppies, ProDOS compatible hard disk, or RAM disk. **NOT COPY PROTECTED.**

Capacities:
- 2000 bytes/record
- 200 fields/record
- 30 screen pages/record
- 250 characters in alphanumeric fields
- Hard disk files—up to 40 Megabytes
- Floppy disk files—up to 50 disks

Field Types:
- Alphanumeric, 1 to 250 characters
- Numeric—3 types
- Dollar/cents, to $99,999,999,999,999.99
- Yes/No—only accepts "Y" or "N"
- Date—11 formats available
- Add Date—date when record was added
- Edit Date—last date when record edited
- Add Time—time when record was added
- Edit Time—time when record last edited
- User Defined—for phone & social security numbers, part #'s, etc., 2-20 characters, control over type of characters allowed in each position
- Label Only—no input area—useful for customizing screens

Computed Fields:
Floating point numeric, dollar & date fields can be computed fields.
Examples: (the F stands for Field)
F10 = F7+F8+F9+.06*F12
F28 = F10*(F50>=F10)+F50*(F50<F10)
F5 = (F10>100 AND F20< 1000) OR (F27 > F26)

Report Generator:
- report width: 20 - 255 characters
- up to 255 lines/record on up to 3 pages
- up to 255 fields per report
- print labels up to 5 across
- header and footer lines: separate lines of text (including normal and computed fields) at beginning/end of report, page, group of records, and/or column
- column subtotals and totals, page #s, record #s, & date or time report is printed can be printed anywhere on the page or in header and/or footer lines
- set justification, printstyles, case conversion, number formatting, statistics, date formats, etc. on field-by-field basis
- statistics: count, total, average, min., max. & standard deviation
- complex computed field formulas, including calculations based on column totals and subtotals
- sort on up to 9 fields at a time; case sensitive/insensitive ascending/descending
- print to printer, disk (text file), or screen

DB MASTER®
VERSION FIVE

The Ultimate Data Base Manager for the Apple //

List price: $179. Demo version: $10.
Available now from your local dealer or direct from:

Stone Edge Technologies, Inc.
P.O. Box 200, Maple Glen, PA 19002
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Laser 128 800K 3.5" Drive w/Controller 269.
Laser 128 2-Slot Expansion Box 48.
Laser 128 Cables *(Parallel, Serial, or RGB)* 21.

Backup Utilities & Boards

Alpha Logic
Locksmith 6.0 35.
Central Point Software
Copy II Plus Version 6 20.
Utilico Software E.D.D. IV 21.
E.D.D. IV Plus *(II, II+, IIe w/Disk II)* 79.
E.D.D. IV Plus *(IIe w/DuoDisk or UniDisk 5.25")* 89.

Entertainment

Access Software
World Class Leader Board Golf 26.
Accolade
Mean 18 *(IIGS)* or Hardball *(IIGS)* 25.
Dam Busters, Fight Night, Accolade Comics or Hard Ball 20.
Killed Until Dead 22.
Activision
GBA Championship Basketball *(IIGS)* 26.
GFL Championship Football 26.
Hacker II 25.
Might & Magic 32.
Portal, Hacker II *(IIGS)* or Shanghai *(IIGS)* 29.
Tass Times In Tonetown *(IIGS)* 22.
Addison-Wesley The Fellowship of the Ring 26.
Artworx Artworx Bridge 5.0 20.
Blue Lion Software
Ticket to Paris or Ticket to London 26.
Broderbund Airheart 23.
Championship Lode Runner or Karateka 23.
Data East Karate Champ or Kung Fu Master 15.
Tag Team Wrestling or Commando 24.
DataSoft/Electronic Arts
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Bruce Lee, The Goonies, or Zorro 17.
Electronic Arts
Bard's Tale *(IIGS)*, Instant Music *(IIGS)*, or Music Construction Set *(IIGS) (each)* 39.
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EOS: Earth Orbit Station or Marble Madness 24.
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EPYX Word Karate Championship 20.
California Games *(IIe or IIGS Version)* 25.
Championship Wrestling or Destroyer 25.
Summer Games II or Winter Games 25.
Sub Battle Simulator or Omnicron Conspiracy 25.
Street Sports: Basketball or Street Sports: Baseball 25.
Temple of Apshai Trilogy 15.
World Games, World Games *(IIGS)* or Destroyer *(IIGS)* 25.
Sub Battle Simulator *(IIGS)* or Winter Games *(IIGS)* 25.
The Movie Monster Game 15.
World's Greatest Baseball Game or Football Game 15.
Firebird Licensees, Inc. Elite 22.
Guild of Thieves 28.
The Pawn 29.
Hayden Software Sargon III 32.
Infocom
Ballyhoo, Beyond Zork, Bureaucracy, Fooblitzky, Hitchhiker's Guide, Hollywood Hyjinx, Leather Goddesses Of Phobos, Moon Mist, Nord & Bert, Planetfall, Seastalker, Stationfall, The Lurking Horror, Trinity, or Zork I *(each)* 26.
Sorceror, Suspect, Zork II, or Zork III *(each)* 29.
The Zork Trilogy 45.
Micro League Sports Micro League Baseball 25.
General Manager/Owner Disk 25.
Microprose F-15 Strike Eagle or Silent Service 22.
Mindscape
Defender of the Crown *(Apple IIGS)* 32.
Balance of Power 32.
Sub Mission 25.
Sinbad, S.D.I. or King of Chicago *(IIGS)* 32.
Infiltrator or Bop 'n' Wrestle 19.
The American Challenge Sailing 25.
One Step Software
Golf's Best Pinehurst or St. Andrews 15.
Origin Systems Moebius 41.
AutoDuel 34.
Ultima III or IV 41.
Random House
APBA Major League Baseball 39.
Sierra On-Line
Space Quest or Space Quest *(IIGS)* 32.
Championship Boxing 22.
Kings Quest I, II, or Kings Quest II *(IIGS)* 32.
Leisure Suit Larry *(IIGS)* 25.
Thexder *(IIGS)* 32.
The Black Cauldron 25.
3-D Helicopter Simulation *(IIGS)* 32.
Simon & Schuster
Star Trek *(Kobayashi Alternative)* 25.
Star Trek *(The Promethean Prophesy)* 26.
Sir-Tech Wizardry 32.
Knight of Diamonds 22.
Legacy of Llylgamyn 25.
Deep Space-Operation Copernicus 26.
Spectrum Holobyte Gato 12.
Gato *(IIGS)* 25.
Intrigue 18.
Orbiter *(IIGS)* 31.
Strategic Simulations
Battle For Normandy, Broadsides, Colonial Conquest, Gemstone Warrior, Geopolitique 1990, Imperium Galactum, NAM, North Atlantic '86, Phantasie II, Phantasie III, Rails West, Ring's of Zilfin, Roadwar 2000, Shard of Spring, The Eternal Dagger, or Wizard's Crown *(each)* 26.
Battle Cruiser, Battle Group, Kampfgruppe, Mech Brigade, U.S.A.A.F., Warship, or War in the South Pacific *(each)* 38.
Battle of Antientam or Chickamunga 32.
Gemstone Healer 19.
War in Russia 51.
Sublogic Flight Simulator II 35.
Jet 29.
Scenery Disks 1-3 *(ea)* 15.
Scenery Disk #7 18.
Baseball 35.
Football 29.

Utility/Language Software

Apple Computer
Apple II Instant Pascal 115.
Apple Pascal V1.3 199.
Beagle Brothers
Beagle Basic, Beagle Screens, Big U, Double Take, MacroWorks, or Pro-Byter *(each)* 19.
Beagle Compiler 42.
Beagle G.P.L.E. or Super MacroWorks 26.
D-Code, Extra K, Power Print or Triple Dump *(each)* 21.
Disk Quick, Fat Cat, or I.O. Silver 17.
Dos Bos or Silicon Salad 14.
Pronto Dos or Utility City 17.
Tip Disk #1 13.
Borland Turbo Pascal 3.0 45.
Turbo Database Tool Box 45.
Turbo Tutor 22.
Funk Software
Sideways Prodos & Dos 3.3 45.
Roger Wagner SoftSwitch *(IIGS)* 39.
Merlin ProDos 65.
Merlin Assembler 42.
Merlin Combo Pack 69.
The Byte Works
ORCA/Pascal *(IIGS)* 89.
ORCA/M 4.1 72.
ORCA/M GS 49.
The Software Touch
AutoWorks or Fontworks 34.
Program Writer 34.
Font Disk #1 for FontWorks 20.
TML Systems
TML Pascal for the GS 89.
TML Source Code Library for the GS 35.
TML Speech Toolkit 49.

Graphics Packages

Accolade
Graphics Studio *(IIGS)* 42.
Activision Draw Plus *(IIGS)* 52.
Clip Art Gallery 20.
Gary Kitchen's Game Maker 32.
GameMaker "Designer's Library" Sports 18.
GameMaker "Designer's Library" Sci-Fi 18.
PaintWorks Plus *(Apple IIGS)* 52.
Music Studio *(Apple IIGS)* 52.
Greeting Card Maker 27.
Bantam Software
Walt Disney Card & Party Shop 26.
Walt Disney Comic Strip Maker 26.
Baudville 816/Paint *(IIGS, IIe, & IIc)* 46.
Award Maker Plus 24.
Take 1 Deluxe 36.
Beagle Brothers Alpha Plot 21.
Apple Mechanic 17.
Beagle Graphics 31.
Flex Type, Font Mechanic or Frame Up 17.
Minipix Disk #1, #2 or #3 *(each)* 16.
Shape Mechanic 21.
Broderbund Toy Shop 29.
Toy Shop Refill 18.
Animate 44.
Dazzle Draw 38.
Drawing Table *(Apple IIGS)* 59.
Print Shop Enhanced or Fantavision 32.
Print Shop *(IIGS)* or Fantavision *(IIGS)* 39.
NewsMaker *(Apple IIGS)* 59.
Print Shop Companion 25.
Print Shop Graphics Library I, II, III or Holiday Ed. 16.
Print Shop Paper Refill 12.95
DataPak
Graphicwriter IIGS 95.
Data Transforms Fontrix 1.5 62.
Printrix 1.0 47.
Font Paks 1-15 ea. 14.
Electronic Arts Movie Maker 27.
Deluxe Paint II *(IIGS)* 75.
Video Title Shop 22.
Art Parts I, Art Parts II or Seasons & Holidays *(IIGS)* 25.
EPYX Printmagic 38.
Graphics Scrapbook Chapter #1, #2, or #3 16.
Create a Calendar 19.
Intracorp Business Card Maker 35.
The Video Wizard 35.
PBI Software Visualizer IIGS 59.
Visualizer IIe 55.
Spinnaker T-Shirt Shop 32.
T-Shirt Shop Graphics 15.
Springboard
Springboard Publisher *(IIe, IIc, IIGS)* 79.
Newsroom 35.
Certificate Maker 30.
Certificate Maker Library #1 21.
Newsroom Clip Art Collection Vol. 1 or 3 18.
Newsroom Clip Art Collection Vol. 2 25.
Graphics Expander Vol. 1 or Laser Drivers 25.
Style Sheets 18.
Works of Art 25.
StyleWare, Inc.
TopDraw *(Apple IIGS)* 59.
Unison World
Printmaster Plus 29.
Art Gallery I or Art Gallery II 19.

Communications

Checkmate Technology
ProTerm *(IIGS, IIe, IIc)* 75.
Compuserve Compuserve Starter Kit 24.
PBI Software
Commworks *(IIe & IIc)* 65.
Softronics
Softerm 2 149.
United Software Industries
ASCII: Express Pro: Prodos or Dos 3.3 75.
ASCII: Express Mousetalk 59.

Business Software

Activision Writer's Choice Elite *(IIGS)* 62.
Advanced Logic Systems SpellWorks 31.
The Handlers *(II+, IIe, IIc)* 65.
Apple Apple Works *(IIe, IIc, IIGS)* 199.
Apple Writer *II* 2.0 ProDos *(IIe, IIc)* 119.
BPI Systems
(Accounting Systems for the IIe, IIc & IIGS)
BPI General Accounting ProDos 149.
BPI AR/AP or Inventory ProDos *(ea.)* 149.
BPI Payroll ProDos 149.
Broderbund On Balance 62.
Bank Street Writer *Plus* 52.
Computer Associates SuperCalc 3a 125.
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Datapak Notes & Files (IIGS) 82.
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Will Writer *(Version 2.0)* 32.
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Pinpoint 49.
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PinPoint Document Checker 45.
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PinPoint Toolkit 39.
Point To Point 79.
Infomerge 49.
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RunRun 31.
Command.Com 39.
Graphics Edge 69.
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PinPoint Ram Enhancement 18.
PinPoint Modem Enhancement 18.
ProFILER 3.0 72.
Roger Wagner Publishing
Mouse Write *(IIe, IIc, IIGS)* 89.
Scholastic
Talking Text Writer *(IIGS)* 149.
Sensible Software
Sensible Grammar ProDos *(3.5" & 5.25")* 56.
Sensible Speller-Dos or ProDos w/3.5 & 5.25" 69.
Sensible Writer *(3.5" & 5.25")* 56.
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Homeword Plus *(128K) w/Speller* 45.
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All Programs for IIe with 128K or IIc
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VIP Professional *(IIGS Version)* 179.
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WordPerfect V1.1 w/Speller *(IIe & IIc)* 85.
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Gertrude's Puzzles or Secrets 29.
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Moptown Hotel, Parade, or Number Stumper 25.
Robot Odyssey I or Rocky's Boots 32.
Mindscape Crossword Magic 32.
Perfect Score SAT 45.
Multibotic
Robotic Workshop 119.
Peachtree/Eduware
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Algebra 5 & 6 31.
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Compu-Read *(V 3.0)* 18.
Introduction to Counting 25.
PSAT or SAT Word Attack Skills 19.
Writing Skills 1, 2, 3, 4 or 5 25.
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Term Paper Writer 34.
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Bon Appetit 45.
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Charlie Brown Typing is a Ball 20.
Garfield Double Dares 20.
Garfield Eat Your Words 20.
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Speed Reading 44.
Typing Tutor IV 32.
Spinnaker Kindercomp Gold 28.
Homework Helpers Writing or Math *(IIGS)* 32.
Typing Made Easy 32.
Facemaker: Golden Edition 26.
Kidwriter 25.
Kindercomp, Kids on Keys or Alphabet Zoo 19.
Terrapin Enhanced Terrapin Logo V3.0 69.
Logo Data Toolkit 29.
Weekly Reader
Stickybear Series: Sticky Bear ABC, Car Builder, Codes & Cyphers, Basic, Drawing, Math, Math II, Math Word Problems, Music, Music Library, Numbers, Opposites, Parts of Speech, Picture Printer Library 1, Printer, Reading, Reading Comprehension, Shapes, Spellgrabber, Typing, Townbuilder, or Writer *(each)* 23.

Modems

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Signalman Lightning 2400 299.
Applied Engineering DataLink Modem *(300/1200 baud Internal II+, IIe, IIGS)* 179.
Hayes Hayes Micromodem IIe *(Internal)* 159.
Hayes Smartmodem 1200A *(Internal)* 275.
Hayes 300 Baud Smartmodem IIc w/Smartcom I 189.
Hayes 300 Baud Smartmodem 159.
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Hayes 2400 Baud Smartmodem 449.
Prometheus Pro Modem 1200 *(External)* 239.
ProModem 1200G *(Non Expandable)* 169.
Pro Modem 2400 *(External)* 309.
Pro Modem 2400G *(Non Expandable)* 239.
Pro Modem 1200A *(Single Card)* 199.
Pro Modem 300c 89.
Communications Buffer *(2K Exp. to 512K)* 105.
Alphanumeric Display 69.
U.S. Robotics U.S. Robotics Courier 1200 199.
U.S. Robotics Courier 2400 349.
U.S. Robotics Courier 2400E 409.
U.S. Robotics Courier HST 9600 689.

Accelerators/Ramcards/Z-80/80 Column Cards

Advanced Logic Systems Add-Ram 80/64 49.
Apple Computer
Apple IIe Extended 80 Col. Card 89.
Apple IIe Enhancement Kit 49.
Applied Engineering
RamWorks III *(64K to 3 MB)* Call
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2 Meg Plus RamWorks Expander *(1 or 2M)* Call
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Z-RAM Ultra 1 *(256K or 512K)* Call
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GS-RAM *(256K to 1.5Meg)* Call
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Phasor *(II+, IIe, and IIGS)* 139.
TransWarp Accelerator *(II+ and IIe)* 219.
ViewMaster 80 *(II+)* 119.
Z-80 Plus *(II+, IIe, IIGS)* 119.
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Ramstack Plus IIGS *(256K)* 105.
Checkmate Technology
MultiRam CX *(256K)* 139.
MultiRam CX *(512K)* 175.
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MultiRam Plus *(256K)* 209.
MultiRam Plus *(512K)* 259.
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MultiRam IIe *(832K)* 199.
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MultiRam RGB *(576K)* 215.
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MultiRam RGB *(1024K)* 269.
Zee-80A 55.
MDIdeas, Inc.
OctoRam 256k *(8Mb RamCard w/256k Installed)* 129.
OctoRam 1 Meg *(8Mb RamCard w/1 MB Installed)* 279.
OctoRam 2 Meg *(8Mb RamCard w/2 MB Installed)* 479.
OctoRam SIMM Module Upgrade *(256k SIMMs)* 65.
OctoRam ESP 128K *(Extended Static Ram w/256k)* 149.
OctoRam ESP 512K *(Extended Static Ram w/512k)* 299.
OctoRam ESP Upgrade 64k *(64k Static Ram)* 32.
Micro Sci Micro Sci 80/64e 45.
Orange Micro
Rampak 4GS *(512k Exp. to 4MB w/Utilities)* 139.

Printer Interface Cards

Apple
Apple Super Serial Card 115.
Applied Engineering
Serial Pro *(II+, IIe, IIGS)* 135.
Apricorn Apricord IIc 54.
Super Serial Card 75.
Orange Micro
Pro Grappler *(Apple IIe or IIGS)* 75.
Serial Grappler Plus 61.
Buffered Grappler+ 99.
Grappler IIc 79.
Grappler C/Mac/GS 65.
Hot Link 49.
Thirdware
Choice of Parallel, Serial, ImageWriter I (Serial), or ImageWriter II (Serial)
Finger Print Plus II+, IIe, IIc 89.
Finger Print G+ *(IIGS)* 55.

Clock/Calendar Peripherals

Applied Engineering
TimeMaster H.O. 79.
IIc System Clock 55.
SMT No Slot Clock *(II+ & IIe)* 42.
Thunderware
Thunderclock Plus 109.

Accessories

Kensington System Saver *(Platinum or Beige)* 64.
Conserver *(IIGS Switched Surge Suppressor w/Fan)* 115.
Juice Box *(IIGS Switched Surge Suppressor w/Fan)* 62.
Curtis Diamond 29.
Curtis Emerald 36.
Curtis Ruby 54.
Curtis Sapphire 47.
Apple Mouse IIe 119.
Apple Mouse IIc 89.
Thunderscan Apple *(IIGS, IIe, and IIc)* 179.
AST-VisionPlus Digitizer *(IIGS)* 269.
SuperSonic *(Stereo Card for IIGS)* 52.
SuperSonic Digitizer *(IIGS)* 52.
Hayes Mach II Joystick *(Beige or Platinum)* 29.
Hayes Mach III Joystick *(Beige or Platinum)* 35.
Kraft Universal 3 Button Joystick *(II+, IIe, IIc)* 32.
Koala Pad Plus w/Graphics Exhibitor 79.
Echo IIB Speech Synthesizer *(II+, IIe, IIGS)* 105.
The Cricket IIc 125.
Rainbow Paper Pak *(300 Sheets)* 14.
ImageWriter Ribbon-Black 4.50
ImageWriter Ribbon-Color 5.
ImageWriter II - 4 Color Ribbon 12.
ImageWriter Rainbow Pk. (6 Colors) 27.

Blank Media

5¼" Blank Diskettes
BASF 5.25" SS/DD *(box of 10)* 8.
Verbatim 5.25" SS/DD *(box of 10)* 10.
Sony 5.25" SS/DD *(box of 10)* 9.
Maxell 5.25" SS/DD *(box of 10)* 10.
3M 5.25" SS/DD *(box of 10)* 11.
3½" Blank Diskettes
BASF 3.5" DS/DD *(box of 5)* 9.
Bulk *(Sony)* 3½" DS/DD *(box of 10)* 16.
Centech 3½" DS/DD Color Disks *(box of 10)* 19.
Sony 3.5" DS/DD *(box of 10)* 19.
Fuji 3.5" DS/DD *(box of 10)* 20.
Maxell 3.5" DS/DD *(box of 10)* 20.
Verbatim DS/DD *(box of 10)* 20.
3M 3.5" DS/DD *(box of 10)* 21.
C. Itoh 3.5" DS/DD Color Disks *(box of 10)* 25.

Printers

Brother M-1109AP *ImageWriter Comp.* 259.
M-1409 *(180cps Dot Matrix NLQ) 10"* 349.
M-1509 *(180cps Dot Matrix NLQ) 15"* 389.
HR-20 *(20cps)* Daisywheel 349.
HR-40 *(35cps)* Daisywheel 599.
TwinWriter 5 779.
Epson LX-86/LX-800 Call
FX-86e Call For Call
FX-286e Most Call
LQ-800/1000 Recent Call
EX-800/1000 Low! Low! Call
LQ-2500 Prices Call
Okidata Okimate 20 Color Printer 139.
Microline 182P *(120cps Dot Matrix 10")* 249.
Microline 192*Plus (200cps Dot Matrix 10")* 339.
Microline 193*Plus (200cps Dot Matrix 15")* 489.
Microline 292P *(240cps Dot Matrix 10")* 539.
Microline 293P *(240cps Dot Matrix 15")* 639.
Panasonic
KXP-1080AP *(100 cps) ImageWriter Compatible* 199.
KXP-1080i *(120 cps)* NLQ Mode 179.
KXP-1091i *(160 cps)* NLQ Mode 199.
KXP-1092i *(180 cps)* NLQ Mode 309.
KXP-1592 *(160 cps)* NLQ Mode 419.
KXP-1595 *(240 cps)* NLQ Mode 439.
KXP-3131 *(16 cps)* Daisywheel 259.
KXP-3151 *(23 cps)* Daisywheel 409.
Star Micronics
NX-10 *(120cps Dot Matrix/NLQ 10")* 189.
NX-15 *(120cps Dot Matrix/NLQ 15")* 339.
NP-10 *(100cps Dot Matrix/NLQ 10")* 189.

Disk Drives/Hard Disks

American Micro Research *(Micro Sci)*
A5 D Half Height 5¼" Drive *(IIGS)* 159.
A2 Full Height 149.
A5 Slimline IIe 139.
A5 Slimline IIc 139.
Micro Sci C2 Controller 49.
Central Point Software
Mix and Match 5¼" & 3½" Drives:
Universal Disk Controller 79.
Universal Disk Controller/800KB Drive Bundle 269.
First Class Peripherals
Sider 10MB Hard Drive 449.
Sider II 20MB Hard Drive 569.
Sider 40MB Hard Drive 1049.
B-Sider 20MB Tape Backup 569.
Blank Tape 5 Pack 59.
Revision D 49.
Hi-Tech Peripherals
Full Height 5¼" Drive for Apple IIe *(Beige)* 139.
Half Height 5¼" Drive for Apple IIe or IIc *(Beige)* 139.
Half Height 5¼" Drive for Apple IIe or IIc *(Platinum)* 149.
Half Height 5¼" Drive Platinum for IIGS 169.
Apple IIc Drive Adaptor 15.
Mitac AD-3C Slimline IIc 129.
Pico Products
Apple Half-Height II+, IIe, IIc 139.
ProAPP
ProAPP 20 MB Hard Disk System *(II+, IIe, & IIc)* 799.
Video Technology Computers, Inc.
Laser FD 100c *(Apple IIc)* 139.
Laser FD 100 *(Apple II Series)* 139.

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CIRCLE 185 ON READER SERVICE CARD

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PICK OF THE CROP
BY PETER TUCKER

The most interesting products of the month for the Apple II family

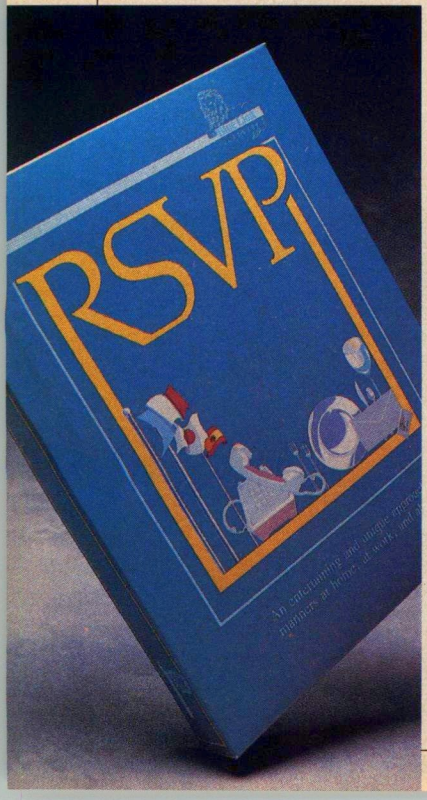
PRODUCT SPOTLIGHT

BETTER MIND YOUR MANNERS

Let's see. Should sushi be eaten with the fingers, or should the fingers be eaten separately?

Seriously, folks, RSVP from Blue Lion may be the answer for just such a perplexing moment. For the answer to those unique social situations in which "manners" are important, you might decide to turn to RSVP. For instance:

What is the proper way to eat a croissant? Where do you put your napkin at the end of a meal? What is the most inappropriate gift in China? (Perhaps a croissant wrapped in a napkin?).



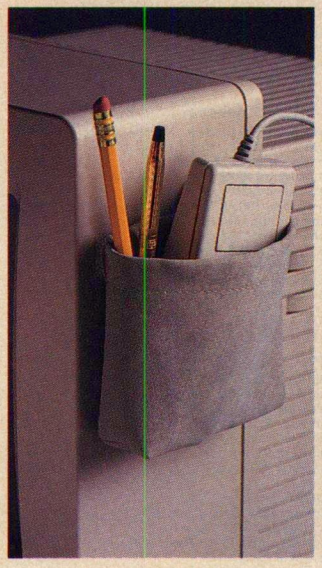
Blue Lion has taken a basic question-and-answer approach to the teaching of manners. The object of the game is to succeed in one of eight chosen professions. Pick a career (politics, big business, publishing, etc.); pick one of 17 categories (business meals, formal dinners, telephone manners, etc.); and you're on your way.

For international careers, you have the further option of specifying 20 different countries. You win the game when you reach your career goal without insulting too many movers and shakers.

You'll have fun with RSVP. Whether it will actually change your appalling social behavior is anyone's guess.

RSVP
List Price: $39.95
Requires: Apple IIe, IIc, or IIGS; 48K RAM; one 5¼-inch disk drive. DOS 3.3; copy-protected.
Blue Lion Software
P.O. Box 650
Belmont, MA 02178
(617) 876-2500

CIRCLE READER SERVICE NO. **401**



MOUSEPOUCH NO SLOUCH

So, where do you put your mouse when she's cold and sleepy? Try this handy-dandy, not-so-essential but smartly color-coordinated MousePouch from H&H Enterprises.

You'll find this soft MousePouch, made of "suede-like" vinyl, available in the new Apple platinum or traditional tan. It attaches with adhesive Velcro and can double as a 3.5-inch-disk holder (holds about eight).

You may also find your MousePouch getting stuffed with pencils, paper clips, disk labels, or a few dozen sticks of your favorite chewing gum. You'll find the MousePouch handy for whatever the avid Apple enthusiast needs close at hand.

Just remember to clean it out for your mouse at bedtime.

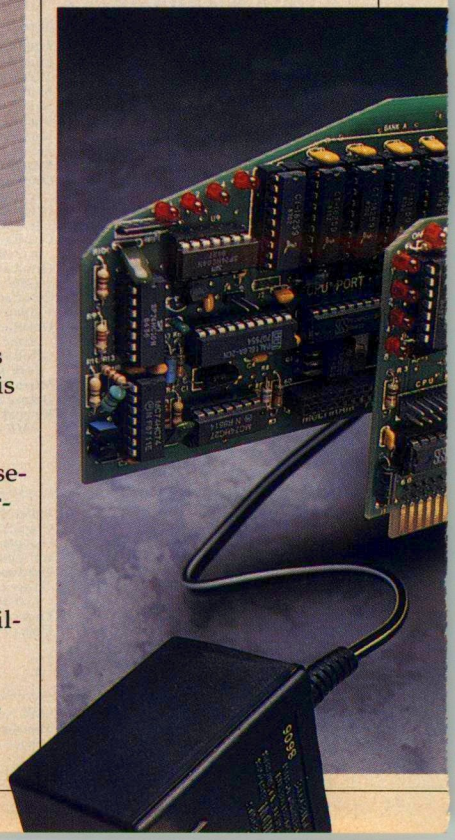
MousePouch
List Price: $4.95
H&H Enterprises
P.O. Box 2672
Corona, CA 91718
(714) 737-1376

CIRCLE READER SERVICE NO. **402**

BATTERY-BACKED MULTIRAM

MultiRAM Plus from Checkmate Technology offers a versatile and expandable memory upgrade, with the added option of battery-backed-up RAM.

The MultiRAM Plus card has four RAM banks that accommodate either 256K or one-megabyte chips, for a maximum of four megabytes. The



standard unit comes with 256K installed.

The card itself is a "piggyback" board, attaching to either the Checkmate QCard (see photo) or the MultiRAM RGB card, both from Checkmate Technology.

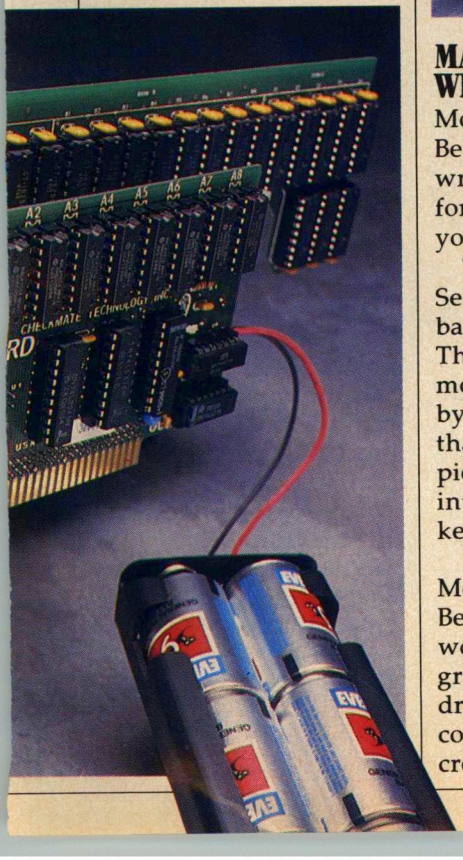
Checkmate also offers the option of an External Power Module consisting of a wall transformer and battery holders for either alkaline or Ni-Cad batteries. It ensures that all RAMdisk files won't disappear if you turn off the computer or experience an unexpected power failure.

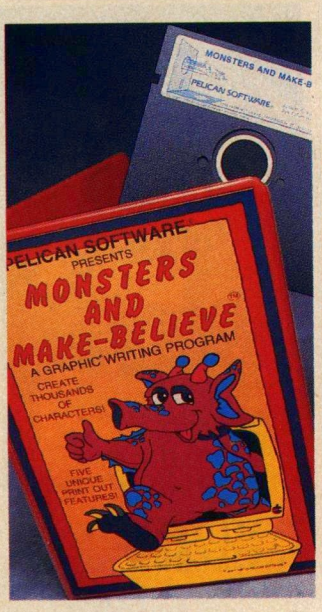
The MultiRAM Software Disk, included with MultiRAM Plus, configures AppleWorks to use additional memory, installs both DOS 3.3 and ProDOS RAMdisk emulators, and tests memory for defective RAM.

Checkmate has also designed MultiRAM Plus to take advantage of future 4-megabyte memory chips, offering the potential for a total memory upgrade of 16 megabytes, in addition to what you have on the QCard or MultiRAM RGB card.

MultiRAM Plus and External Power Module
List Price: MultiRAM Plus 256K minimum configuration, $249.95; QCard, $129.95; External Power Module, $39.95
Requires: Apple IIe; MultiRAM RGB or QCard; one 5¼-inch disk drive (for MultiRAM software).
Checkmate Technology
509 South Rockford Dr.
Tempe, AZ 85281-3021
(602) 966-5802

CIRCLE READER SERVICE NO. **403**





MAKE A MONSTER, WRITE A MYTH

Monsters and Make-Believe is a graphics/writing program meant for creative-minded youngsters.

The idea is simple: Select any one of eight background settings. Then begin building the monster of your choice by selecting from more than 100 body parts. The pieces are easy to move into place with the arrow keys.

The second half of Monsters and Make-Believe is a full-screen word-processing program with which children write stories to accompany their monster creations. Both monsters

and stories can be stored and retrieved from a data disk for later fun.

Even the youngest kids will be up and monster making in no time with this easy-to-use and attractive menu-driven program.

The program also contains a printing facility for printing both monsters and myths in oversized, standard, or miniature form. You can also squish or elongate your monsters, depending on your monster-mood.

Monsters and Make-Believe
List Price: $39.95
Requires: Apple II Plus, IIe, IIc, or IIGS; 64K RAM, one 5¼-inch disk drive.
Pelican Software
768 Farmington Avenue
Farmington, CT 06032
(800) 822-DISK

CIRCLE READER SERVICE NO. **404**

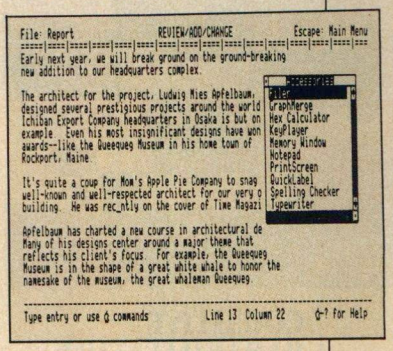
PINPOINT GOES GS

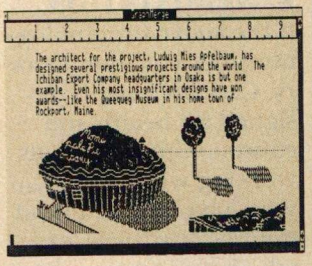
Just released from Pinpoint, here are three popular AppleWorks add-on programs preconfigured for your Apple IIGS.

First you'll find the original set of eight Pinpoint desktop accessories, including an appointment calendar, calculator, notepad, envelope addresser, telephone dialer, and more. These are newly combined with two other utilities, the Pinpoint Spelling Checker and the KeyPlayer macro maker.

All the Pinpoint accessories "pop up" in windows within AppleWorks.

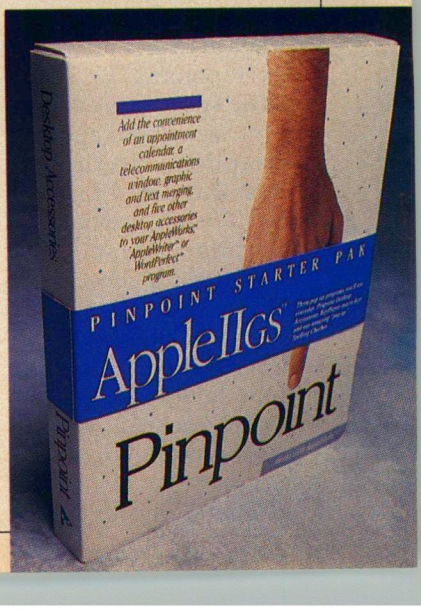
Together, these tools, plus AppleWorks, will have you merging pictures with text, addressing envelopes, scheduling appointments, and even choosing on-line data services in a communications window. A custom installation program also allows installation of these accessories on other ProDOS programs, including Apple Writer and WordPerfect.



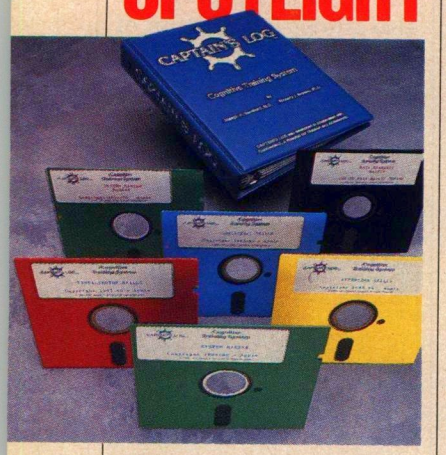


Pinpoint Starter Pak
List Price: $149
Requires: Apple IIGS; 256K RAM; one 3.5-inch disk drive; AppleWorks or other ProDOS application program. ProDOS; not copy-protected.
Pinpoint Publishing
5865 Doyle Street
Suite 112
Emeryville, CA 94608
(415) 654-3050

CIRCLE READER SERVICE NO. **405**



PRODUCT SPOTLIGHT



COGNITIVE REHABILITATION

If the above terminology mystifies you, don't worry. Captain's Log is designed for health and education professionals working with people who have suffered head injuries or strokes, or who have learning disabilities.

Professionals using Captain's Log may be in the fields of special-education psychology, psychiatry, occupational therapy, or vocational rehabilitation.

Captains' Log consists of three modules: Attention Skills, Visual/Motor Skills, and Conceptual Skills. Together they comprise 21 programs for evaluation and training. Other modules are under development.

The specific programs cover visual and auditory perceptions, discriminations, and timed reactions. Visual/spacial organization, memory, and simple motor speed are all tested.

Captain's Log also allows the use of alternate input devices such as mouse, trackball, special joystick, or view-control system.

Network Systems also offers complete system packages, complete with specialized hardware. A demonstration disk of Captain's Log is available for $10.

Captain's Log
List Price: all 21 programs, $795; program modules, $325 each
Requires: Apple II Plus, IIe, or IIGS; 64K RAM; 5¼- or 3.5-inch disk drive; mouse; color monitor; Applied Engineering Timemaster II clock/timer. Not copy-protected (special 5¼-inch key disk required to boot programs, however).
Network Services
1915 Huguenot Road
Richmond, VA 23235
(804) 379-2253

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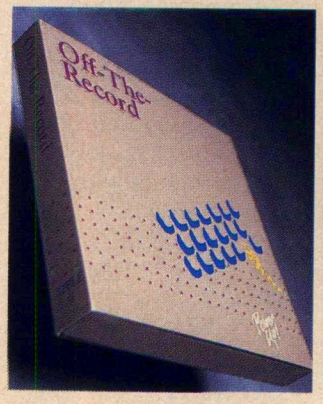


GETTING CRYPTIC

Are you concerned with data security? Here's a simple and effective encryption program available from Channelmark Corporation.

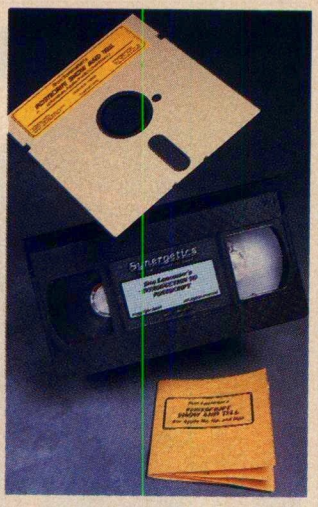
Company records, personnel files, or personal information become inaccessible to anyone without the correct password.

Off-the-Record lets you lock and unlock individual files in DOS 3.3 format, or lock and unlock entire diskettes formatted in DOS 3.3, ProDOS, or Pascal.

Passwords may be up to 25 characters long, counting blank spaces. You can create an even more complex password system by using two passwords. To do this you simply lock the file or disk once and then lock a second time with an additional password, which gives you two levels of protection.

Off-The-Record
List Price: $39.95
Requires: Apple II Plus, IIe, or IIGS; 48K RAM; one 5¼-inch disk drive. DOS 3.3; copy-protected.
Channelmark Corp.
2929 Campus Drive
San Mateo, CA 94403
(415) 345-5900

CIRCLE READER SERVICE NO. **407**



POSITIVELY POSTSCRIPT

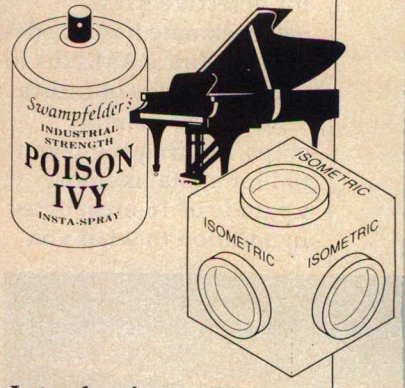
Take it from the guru, Don Lancaster. PostScript laser printing is available to Apple II users. In fact, according to Lancaster, you'll be doing things with a LaserWriter that Mac users were only recently dreaming of.

To get seriously involved in PostScript programming, you might consider two offerings from Lancaster's company, Synergetics:

First consider *Don Lancaster's Introduction to PostScript*. This 65-minute VHS video for users' groups has Lancaster sharing his many laser-printing and PostScript secrets—from curve tracing to toner refilling, he covers it all. Be careful: Lancaster's PostScript mania is infectious.

With your newfound PostScript enthusiasm, you might boot up Don Lancaster's PostScript Show & Tell. This disk presents unique graphics and text routines written in PostScript. The demos are as easy to load as ordinary ProDOS text files from your favorite text editor, word-processing program, or communications package. Bear in mind that you will need access to a PostScript-compatible printer, such as the LaserWriter or LaserWriter Plus, in order to print these interesting examples.

Additional PostScript goodies are also available from Synergetics. If PostScript is truly the future, then Don Lancaster is making sure that Apple II users will be there en masse.



Introduction to PostScript and **PostScript Show & Tell**
List Price: $39.50 each
Requires: Introduction to PostScript—VHS video player or recorder. PostScript Show & Tell—Apple IIe, IIc, or IIGS; PostScript-compatible printer; ProDOS word-processing program or communications package. Not copy-protected.
Synergetics
746 First Street
Box 809
Thatcher, AZ 85552
(602) 428-4073

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FOR MORE PRODUCT INFORMATION, SEE "ROUNDUP," PAGE 160.

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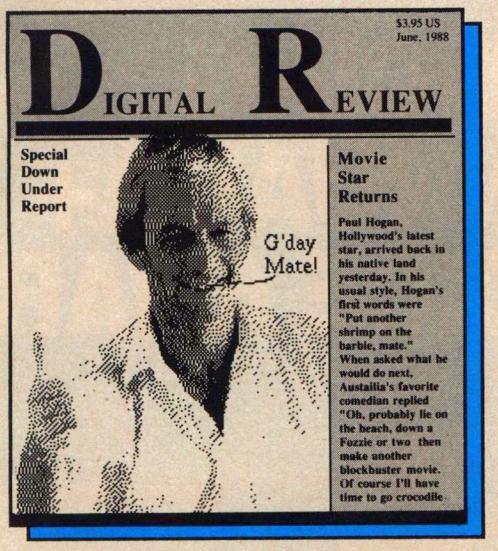

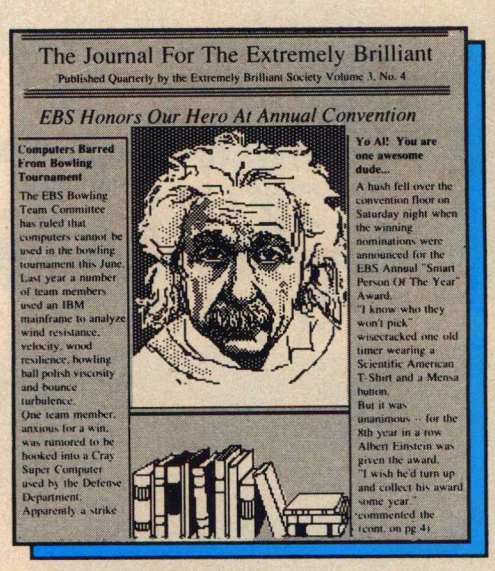

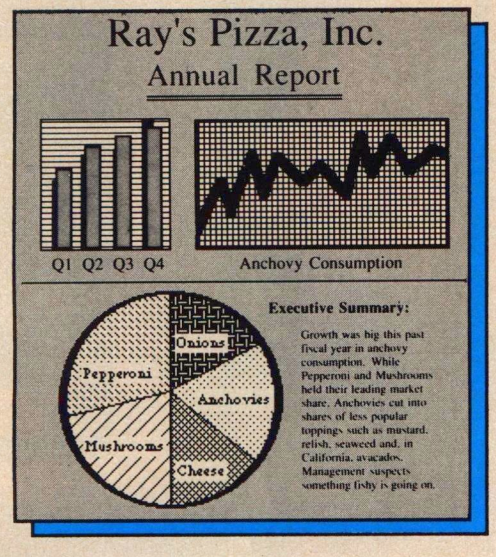

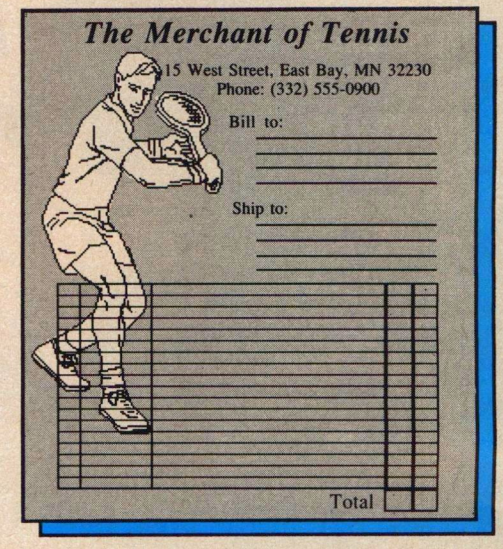

Personal Newsletter brings the exciting world of desktop publishing to your Apple.

Now you can design your own newsletters, reports, forms, ad layouts, cards and more.

Using different typestyles and fonts you can create sensational looking text, and combine it with sharp graphics.

With **Personal Newsletter** you can create your own pictures, or import files from other graphics programs like Print Shop,® and Newsroom.®

There's even a disk full of clip art for you to use.

You can open up windows for text or graphics and decorate them with borders and textures.

Best of all, you can buy **Personal Newsletter** from your favorite computer store for only $59.95 (suggested retail price).

System requirements: Apple IIe (enhanced ROM), IIe or GS (IIe mode). 128K. Mouse optional. Works with most dot matrix printers.

All trademarks acknowledged.

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IT'S YOUR CHOICE...

ANNOUNCING THE 4TH ANNUAL A+ READER'S CHOICE AWARDS

It's time for all dedicated Apple II system owners and users to cast their ballots for "The Best Apple Products of 1988"!

Because you're the expert, and you use your Apple II for many different business, educational and entertainment applications, you're the best judge of which Apple-compatible products get the job done—the way you want it done!

This year, with so many outstanding new products and so many upgrades of "old favorites," we want you to "Vote for the Best"—and, you may even win a complete Apple IIGS System!

Whether you use your Apple II to project budgets or run a mail-order business... create group newsletters, reproduce old master's paintings or fight demons in outer space, you know

which software is challenging, friendly and down-to-earth!

Take a minute now and select "The Best Software and "The Best Hardware of 1988"—it's your choice from the #1 choice of Apple magazines, A+ Magazine! Winning manufacturers are awarded the golden A+ Reader's Choice Award, telling the world that the most dedicated and knowledgable Apple II owners and users selected their hardware and software as the Best of 1988!

WIN A COMPLETE IIGS SYSTEM!

Your completed Ballot automatically enters you in the Apple IIGS Sweepstakes! If your ballot is selected you'll receive a IIGS system complete with the AST Research-Vision Plus Digitizer, Applied Engineering 512K Ram Board, MDIdeas Supersonic Stereo Card and a KroyKolor printer/photocopier enhancer!

Winner will be announced in the May 1988 issue!

MAIL YOUR BALLOT TODAY!

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1. On an Official A+ Reader's Choice Award Ballot/Official Entry Form, print your name, company name, company address, phone number, and Apple II computer used, incomplete ballots will not be accepted. Write in the names of the software/hardware you are selecting as The Best of The Year. Only one entry per individual allowed. All entries/ballots must be received by December 21, 1987.

2. All entries must be postmarked by December 18, 1987 and received by December 21, 1987. All entries become the property of Ziff-Davis Publishing Company, which reserves the right to reprint the name and address of the winner. The odds of winning depend upon the number of eligible entries received and submitted in accordance with the rules.

3. Winner will be selected in a random drawing from among all entries received, under the supervision of the publishers. The prize will be awarded and winner may be required to execute an affidavit of eligibility and release.

4. Taxes are the responsibility of the winner. Any manufacturer's claims or warranties will apply, but the Ziff-Davis Publishing Company makes no claims or warranties with regard to any prize. Prize is not transferable. No substitution for prize. Approximate retail value of prize as of 6/87 is $4,999.00.

5. Sweepstakes open to all residents of the US, its territories and possessions, 18 years of age or older, except for employees (and their families) of the Ziff-Davis Publishing Company, its affiliates and its advertising and promotion agencies. Void wherever prohibited or restricted by law.

6. For winner's name, please send a stamped, self-addressed envelope to: A+ Reader's Choice Awards IIGS Sweepstakes, One Park Avenue, 3rd Floor, New York, NY 10016. A list will be mailed within 60 days of close of Sweepstakes.

YOU CAN WIN THIS APPLE IIGS SYSTEM

IIGS UPDATE

BY RICH JAROSLOVSKY

Two new programs that provide a glimpse of the Apple IIGS's word-processing possibilities

WRITE CHOICES

When the Macintosh first made its appearance, bundled with it was MacWrite, a word-processing program that dazzled early users with its easy-to-use mouse interface, bit-mapped graphics, and other innovations. The Mac, and MacWrite, were so revolutionary that it took a while before people began to notice their limitations in document length and

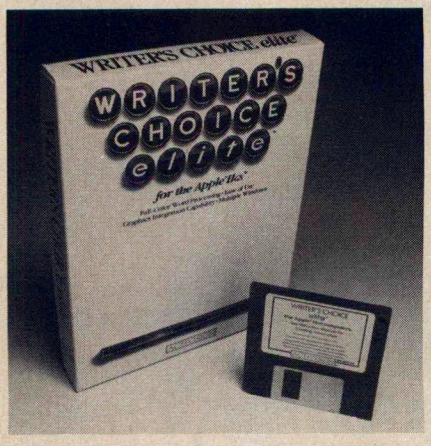
speed. Not until improvements in the machine and the release of Microsoft Word could the Mac be taken seriously as a word-processing machine.

Don't look now, but history is repeating itself with the Apple IIGS. In many ways, the IIGS should be a superior word-processing machine—and, as with the early Mac, we can still hope that it may develop to take better advantage of its considerable strengths. Like the MacWrite of yesteryear, however, the first word-processing programs for the GS are somewhat limited in their usefulness.

To be sure, StyleWare's MultiScribe GS (Version 2.0) and Activision's Writer's Choice *elite* do more than hint at the vast potential of the Apple IIGS. Both are ProDOS 16-based, Mac-style programs that take full advantage of the mouse interface—meaning that both programs are extraordinarily easy to learn and use.

Since both use the IIGS graphics screen, they readily allow the mixing of text and color graphics in a way that is impossible on other members of the II family and is the envy of many a Mac user. Both programs come with an assortment of fonts, or typefaces, that are available both on-screen and in print, and both can print in color on an appropriately outfitted ImageWriter II; both also boast LaserWriter compatibility. For small newsletters, signs, menus, brochures, and other such documents, they offer unmatched flexibility and features.

No, where these programs fall



down is in the most basic task of a word-processing program: the handling of text. In comparison with more traditional programs, they are slower in loading documents and scrolling through and otherwise manipulating files; they also aren't comfortable with documents of any significant length. In other words, they aren't very good

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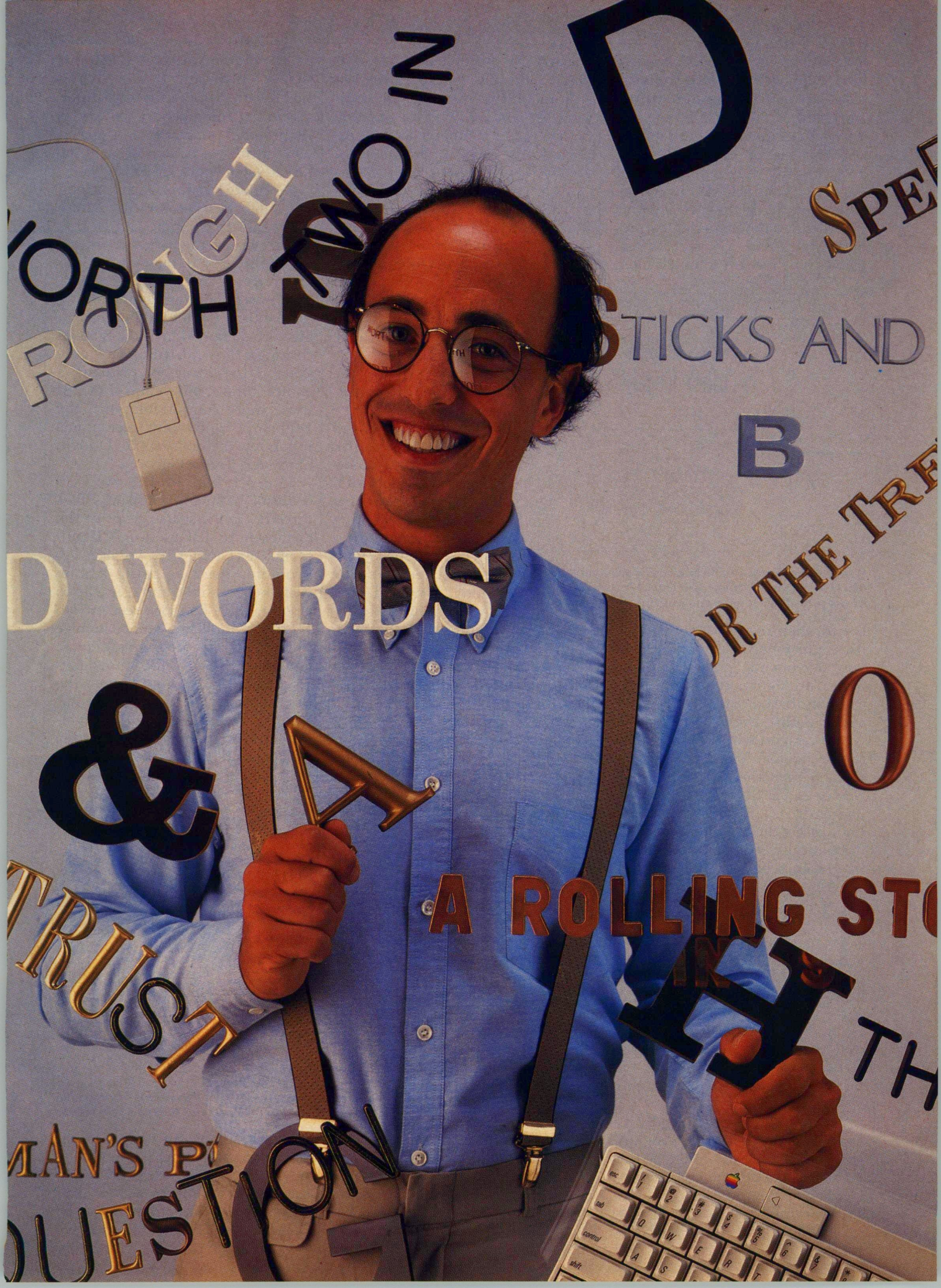
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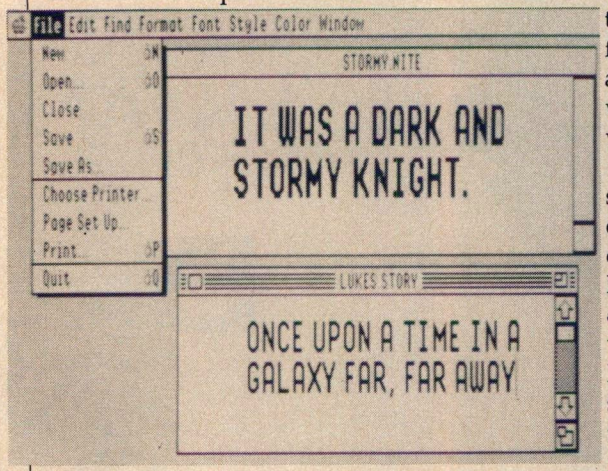
for *writing*. They are both loads of fun to play with but—so far at least—aren't that much fun to work with.

The most obvious limitation is also the easiest to remedy. Both programs say they require a minimum of 512K of RAM. Don't you believe it. With their bit-mapped graphics and other special features, both MultiScribe GS and Writer's Choice *elite* require so much memory for their own use that you will have precious little room left for your documents. In a 512K system, StyleWare figures that MultiScribe can handle the equivalent of only about eight single-spaced, typewritten pages, barely enough for a high-schooler's history paper. Activision says that Writer's Choice *elite* does a little better, accommodating 10 to 15 pages of text. In both cases, the text capacity drops dramatically if you choose to mix in graphics or take advantage of different fonts.



Writer's Choice* elite *and MultiScribe offer many Mac-like features. This screen from Writer's Choice shows pull-down menus and multiple windows.

That's the bad news. The good news is that, as you add memory to your GS in excess of 512K, those length restrictions fall away dramatically. In a system with, say, 1.25 megabytes of memory, the limitations are all but meaningless, and you should have no problem creating text-and-graphics documents that are as long as you'll ever practically need.

Although the MultiScribe GS and Writer's Choice *elite* programs share a common look and feel, they do have some differences. Here is a rundown on each.

MultiScribe GS

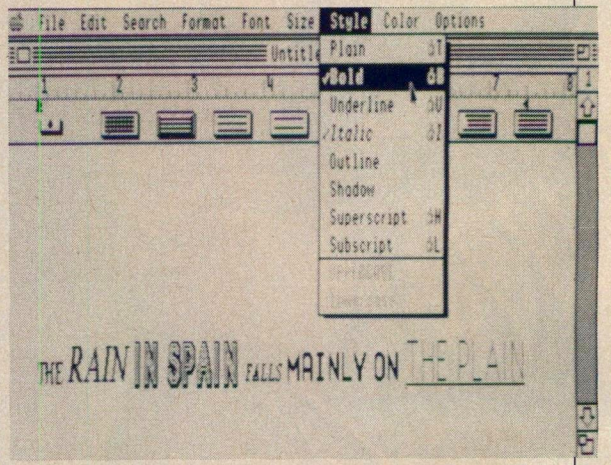
Version 1.0 of MultiScribe GS was among the first true GS products to hit the market. Late last summer, StyleWare began shipping Version 2.0, with an upgrade policy as commendable as it is unusual in the software business: All registered owners of earlier versions are receiving Version 2.0 free of charge. The company explains that, because of development delays, it had to omit from Version 1.0 certain features it had intended for the program. When these features became available, StyleWare didn't want to penalize those who'd bought early.

MultiScribe comes on a single, non-copy-protected 3.5-inch diskette; the company says it can be loaded onto a hard-disk drive, although the otherwise excellent manual lacks instructions for such use. Upon booting the program, you find yourself in a text window—entitled for the moment "Untitled 1"—and you are off and running. The program is a what-you-see-is-what-you-get word-processing program, in more ways than one. You control margins, line spacing, tabs, text centering, and the like by clicking the mouse on a colored "ruler" running across the top of the document. (Once formatting is complete, you can hide the ruler via a pull-down menu and another click.) Pull-down menus also present a choice of ten fonts, in a variety of sizes and styles, and Version 2.0 allows increasing and decreasing the size of typefaces in one-point increments. You can enter text in any one of seven colors, which you can also select from a pull-down menu. Colored letters can be mixed and matched in the same document. Any options you select appear on the screen. The program allows up to eight open document windows at any time, and you can shrink, stretch, or stack them.

MultiScribe lets you take advantage of three kinds of graphics: bit-mapped pictures you create in IIGS paint programs such as Electronic Arts' DeluxePaint II and Activision's Paintworks Plus; structured graphics you prepare in StyleWare's own TopDraw; and objects you create with the basic draw functions of MultiScribe 2.0 itself.

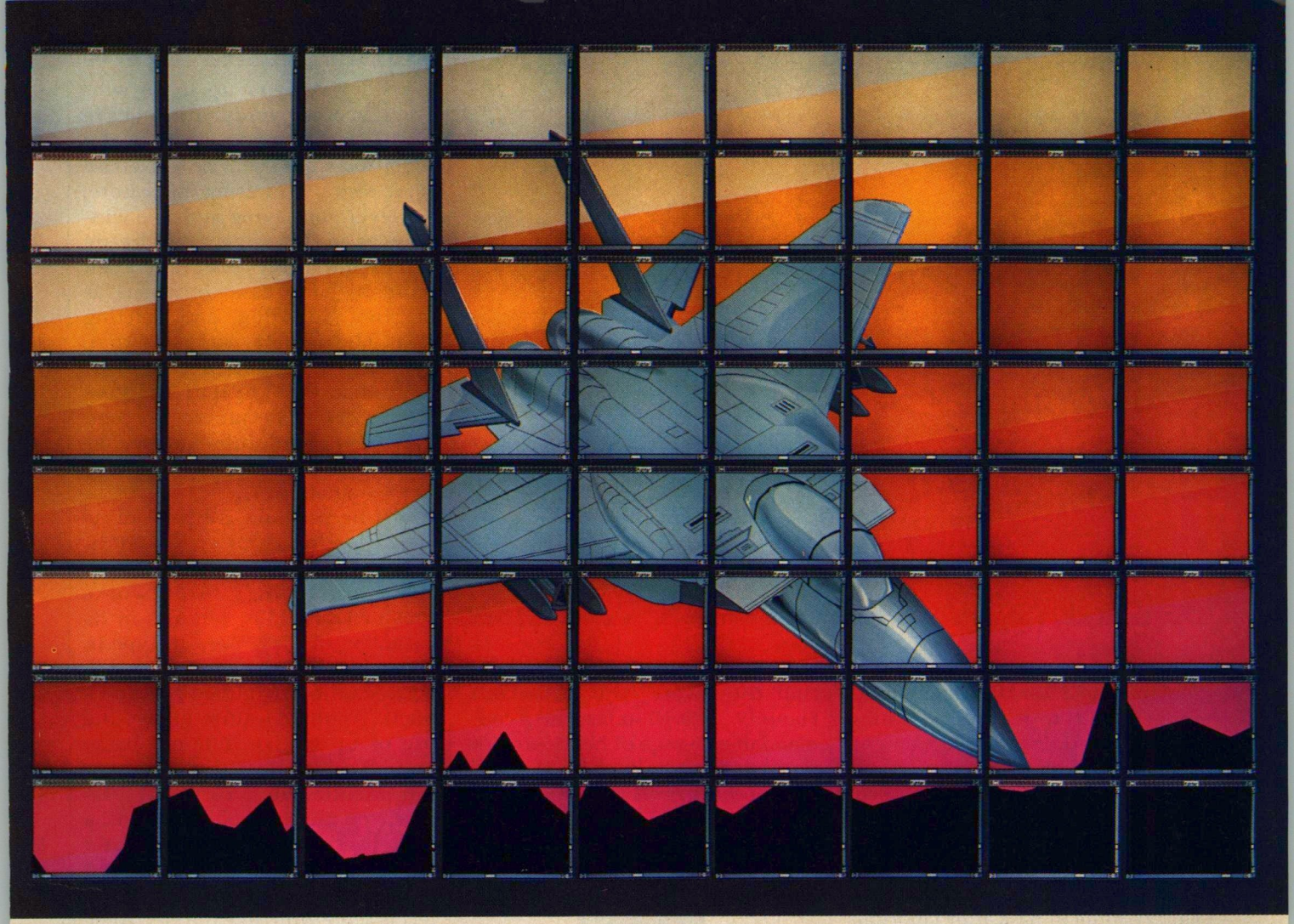
Among writers a continuing debate rages over the mouse interface. Some argue that because the mouse frequently requires you to take your hands off the keyboard, it is a distraction. Others say you more than make up for the time by not having to fumble with a manual to find keyboard commands. MultiScribe gets around the issue by offering a choice: total mouse control or, for those more comfortable with the keyboard, equivalent commands involving the open-apple, Option, Shift, and Control keys.

The original MultiScribe GS couldn't handle AppleWorks files directly. You first had to print the document to disk as an ASCII (unformatted) text file. Version 2.0 promotes itself as being AppleWorks-compatible, and it is—up to a point. Short files load readily into MultiScribe, letting you customize them with the program's graphic and font features. But longer files of, say, 18K to 20K tend to crash the program even if the machine has sufficient memory, resulting in simultaneous flashing of the mouse pointer and the wristwatch icon until you reboot the computer.



MultiScribe GS and Writer's Choice also handle text and formatting in Mac-like ways. This MultiScribe screen shows rulers, fonts, and the typestyle menu.

The program can handle longer ASCII files, albeit less than speedily. An 18K ASCII file takes a full 23 seconds to load from a hard disk. Scrolling is convenient—you either click and drag in the scroll bar



Drawing by Dale Crawford of StyleWare

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CIRCLE 155 ON READER SERVICE CARD

WRITE FEATURES

	MultiScribe 2.0	Writer's Choice *elite*
Maximum number of windows	8	16
Number of fonts	10	13
Reads AppleWorks files directly	YES	NO
Has headers and footers	YES	YES
Has mail merge	NO	NO
Finds and replaces	YES	YES
Crosses out text	NO	YES
Number of colors to display text	7	2
Prints in color	YES	YES
Has built-in draw functions	YES	NO

or use open-apple commands. Unfortunately, it too takes some time: three seconds to go from beginning to end of an 18K test document, compared with a virtually instantaneous jump with the same document and AppleWorks 2.0's word-processing program. Printing can be time-consuming indeed; your ImageWriter has to create all those snazzy fonts in pass after laborious pass. In short, get used to the `Please wait` message and wristwatch icon.

StyleWare says it plans to release a series of add-ons to MultiScribe GS, including a dictionary/thesaurus and a set of desk accessories and utilities, including macro capabilities. In other words, the company plans to take MultiScribe along the path of power word processing. MultiScribe as it now stands, however, is much better suited for home publishing and other mixed text-and-graphics applications than it is for "pure" writing. It would be nice to have MultiScribe in your home software library—but in addition to, not in lieu of, your number 1 word-processing program that perhaps you were using on the IIe before moving to the IIGS.

Writer's Choice *elite*

Activision, which started life as a game company, has in recent years moved more and more into productivity software. Writer's Choice *elite* represents one of its most serious efforts yet—though it still has a way to go.

Original versions of Writer's Choice *elite* suffered from the fact that they were copy-protected. Happily, Activision has had a commendable change of heart, and, effective September 1, Writer's Choice *elite* has been shipping with no form of copy-protection. Owners of a copy-protected version can upgrade for a nominal fee of $10 by returning a form letter Activision sent out to registered users in early October. If you did not register, you can still upgrade with adequate proof of purchase: a purchase receipt, the registration card, the manual cover, or a cutout of the product code number on the back cover. (Incidentally, Activision now has removed copy-protection from all its "productivity" and "creativity" software, not just Writer's Choice *elite*.)

You should consider carefully which program better suits your needs.

Writer's Choice *elite* is about as easy to use as a word-processing program can get. It closely tracks Apple's recommended interface; if you know MacWrite, Activision sources say, you know this program. WCE allows optional use of the keyboard instead of the mouse, although it offers fewer keyboard commands than does MultiScribe.

WCE gives you up to 16 windows; in other words, you can have up to 16 documents open at any time. You would be wise to exercise some restraint in using the feature, however, for having multiple windows open slows down the already somewhat poky program even more in such basic functions as marking, inserting, and deleting text. The manual suggests that, generally, you limit yourself to no more than three or four windows at once. Long documents or complex ones containing many different fonts and/or graphics also slow down operation.

The program is liberal in its use of color, not just in transporting graphics from Activision's Paintworks Plus or Draw Plus, but also in its basic text display. You can type in either black or red and can switch between the two in the same document. Another feature allows the use of up to five different background colors; thus, if you want to call attention to a particular passage, you might display it against a blue background that will stand out against the white background of the rest of the document. The effect is something like the electronic equivalent of a highlighter pen. You can also electronically cross out text—draw a red, black, or white line through it without removing it from the screen. Writer's Choice comes with 13 fonts; in conjunction with various styling options, the printed effects are almost limitless.

Writer's Choice *elite* does not directly recognize AppleWorks files. It is supposed to accept ASCII text

VITAL STATISTICS

MULTISCRIBE GS, VERSION 2.0
An update adds new features to this mouse-based Apple IIgs word-processing program.

CPU: *Apple IIgs*
RAM: *512K*
DISK DRIVES: *one 3.5-inch*
OTHER: *mouse; monitor (color preferred); ImageWriter or LaserWriter optional*
OPERATING SYSTEM: *ProDOS 16*
COPY-PROTECTION: *no*
LIST PRICE: *$99.95*

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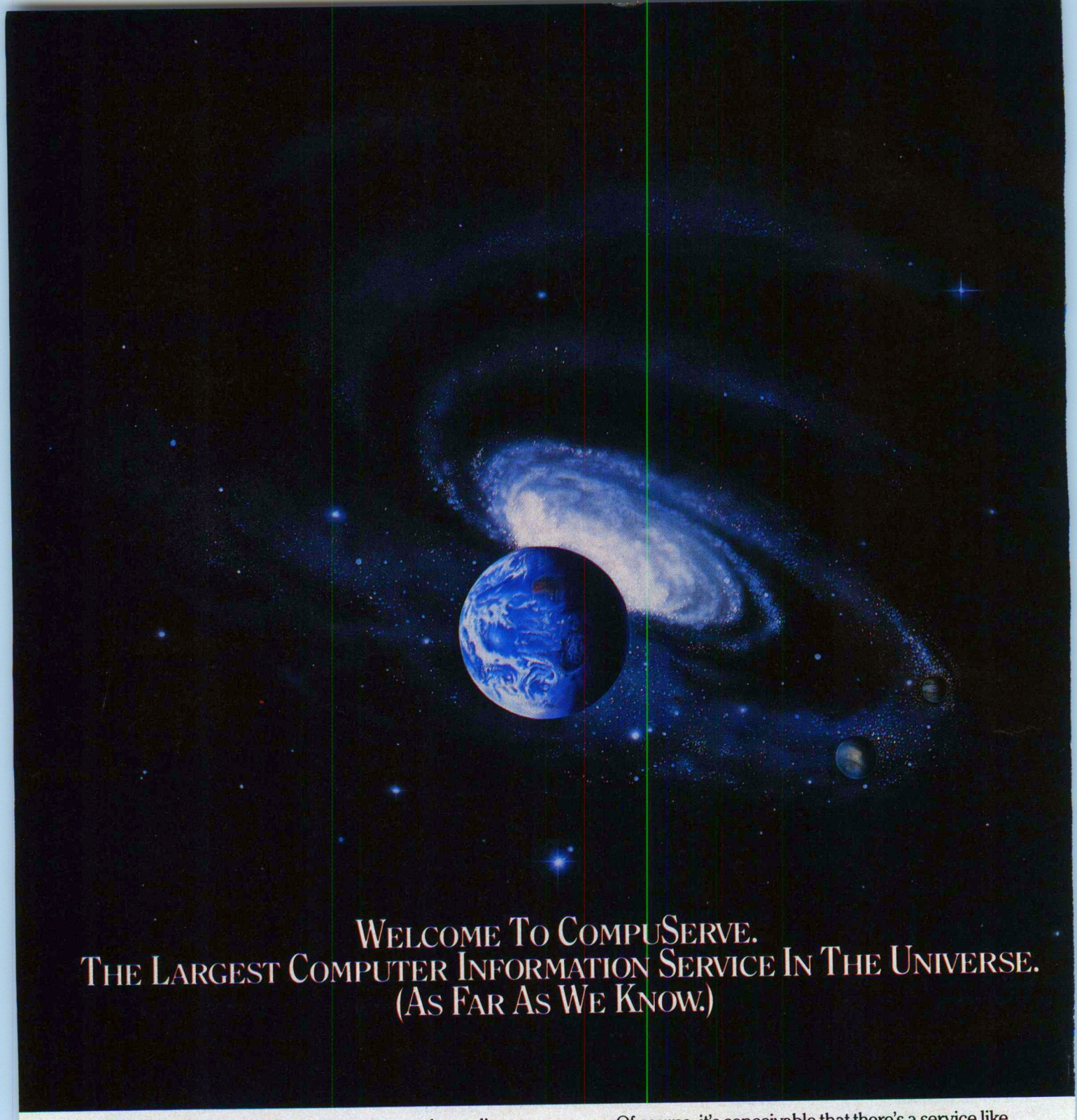

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MORE CHOICES

MultiScribe GS and Writer's Choice *elite* aren't the only word-processing programs for the IIGS—they're just the newest. Another IIGS writing program is GraphicWriter, a desktop-publishing program that allows you to combine text and graphics in columns and "regions." For a full review of GraphicWriter, see the August 1987 issue of *A+*.

There's also a version of WordPerfect for the IIGS. When this article was being prepared a couple of months ago, however, WordPerfect Corporation was about to release a newer version that would incorporate the Macintosh-like look and feel that MultiScribe and Writer's Choice *elite* have. Rather than review the original GS version that was soon to be outdated, we decided to hold off on a full review of that product until the new release became available.

files from AppleWorks or other word-processing programs, enabling you to use its many features to customize the document, but the program seems to have problems dealing with longer ASCII files. The same 18K file that took me 23 seconds to load into MultiScribe GS would not load into Writer's Choice *elite* at all; instead, the program crashed, with the pointer and wristwatch icon flashing in rapid, alternating succession, forcing a reboot. The program also crashed from time to time while trying to save documents as ASCII text files; I encountered no such problems in saving files in the Writer's Choice *elite* format.

Activision says its top priority for Writer's Choice *elite* at the moment is to add mail-merge capability; other add-ons or enhancements, such as macros or a spelling checker, have a lower priority. The path the company is pursuing makes sense for Writer's Choice *elite*: It is a program that is far better suited to producing a small home newsletter than the Great American Novel.

Although Writer's Choice *elite* and MultiScribe GS are such similar programs—or perhaps *because* they are so similar—you should consider carefully which one better serves your purposes. For those who frequently need to circulate

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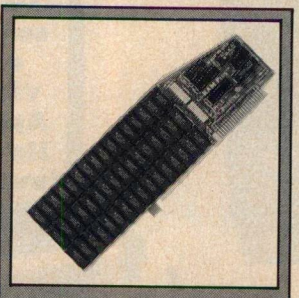

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their documents to others, Writer's Choice *elite*'s background-color and cross-out features may prove valuable; you can highlight or cross out text without actually deleting it, which means many hands can help shape documents without inalterably changing them. In addition, Writer's Choice *elite* offers more fonts and more windows, although length and speed constraints make this last feature somewhat less attractive than it might seem at first blush.

On the other hand, MultiScribe GS offers direct compatibility with AppleWorks files. In addition, the program is somewhat more flexible in terms of graphics, allowing text display in seven colors, vs. Writer's Choice's two, and offering a high degree of compatibility with various graphics programs, including those of publishers other than StyleWare.

Taken together, the Writer's Choice *elite* and MultiScribe GS programs provide a glimpse of the word-processing possibilities of the Apple IIGS. With its user-selectable display options, detachable keyboard, 16-bit microprocessor, and stunning graphics, the GS has nothing preventing it from becoming the premier word-processing machine in the Apple line. But despite the undeniable attractions of these two programs, a word-processing program has yet to come along to redeem the promise of this computer. ✚

Rich Jaroslovsky is a political editor and columnist in The Wall Street Journal*'s Washington bureau.*

VITAL STATISTICS

WRITER'S CHOICE ELITE, VERSION 1.0
Bit-mapped graphics and a mouse interface make this program the closest equivalent to MacWrite on an Apple II.

CPU: *Apple IIGS*
RAM: *512K*
DISK DRIVES: *one 3.5-inch*
OTHER: *mouse; monitor (color preferred); ImageWriter or LaserWriter optional*
COPY PROTECTION: *no*

LIST PRICE: *$89.95*

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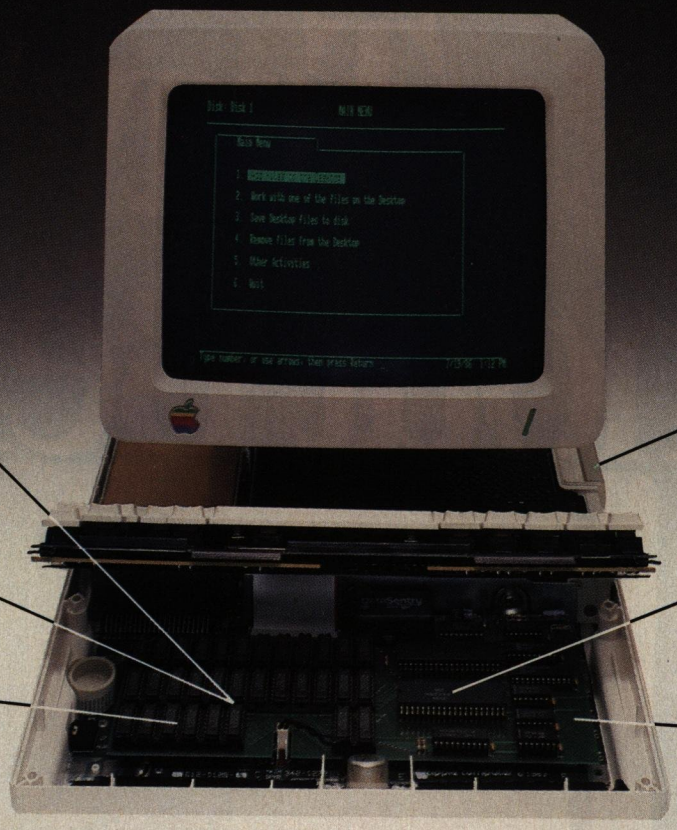

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1 MEG — $459.00

Z-RAM Ultra 2 (with memory and clock)
256K — $269.00 512K — $319.00
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Z-RAM Ultra 1 (Memory only — expandable to 512K)
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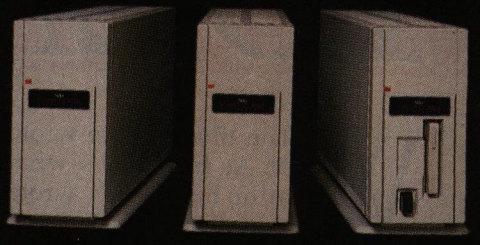

The expansion of that standard to encompass the Macintosh world has been accompanied by a parallel expansion of The Sider Series itself. Besides the Sider C46, the family now includes both a 20- and 40-megabyte hard disk Sider subsystem and a Sider 60-megabyte tape backup subsystem.

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SOFTWARE
BY TAD DAVIS

A look at six Apple II programs that can help you structure your thoughts and organize your writing

IDEA

William Shakespeare wrote fast. At least that's what two of his friends wrote about him. His "mind and hand went together," and he wrote with such "easiness" that he never had "a blot in his papers," they said.

Shakespeare was lucky. For most people, writing is anything but easy. Often the hardest part comes before the first draft, when your ideas are still vague. You have to sharpen the ideas and fit them together in a way that makes sense.

Several Apple II programs can help with this first step. In particular, outline processors can take the place of 3 × 5 cards if you do a lot of research. If you need a more creative approach to structuring your thoughts, there's an "idea processing" program that will give you a visual overview. If you'd rather forget planning, still another program is perfect for short bursts of rapid writing.

Outline Processors

Living Videotext introduced the

first outlining program, ThinkTank, in 1983, establishing the ground rules for electronic outlining in the process. You take your notes and arrange them into clusters of headings and subheadings. When you move a heading, the subheadings move with it. If a thought crystallizes, you can add a few paragraphs to flesh it out.

Even better, outliners such as ThinkTank let you collapse and expand your notes. If you find yourself distracted by details, you can tell the program to hide them. On the other hand, if you have a new detail, you can expand the outline level by level until you find a place for it.

ThinkTank runs under Pascal 1.1, which puts it out of step with more recent software. To compensate, the program provides its own disk-management routines, including one that converts a text file from Pascal to ProDOS.

ThinkTank allows one-line headings, and you can have as many levels as you like. You can add a paragraph of up to 340 characters to any heading. You can print whole or partial outlines with headers, footers, section numbers, and a table of contents. The Port command backs up your outline in compressed format and allows you to cut and paste between outlines. Depending on disk space, ThinkTank outlines can grow beyond two million characters. On a 5¼-inch floppy disk, you'll get something closer to 125,000 characters, or 70 to 80 pages of double-spaced text.

ThinkTank is tightly controlled, even rigid. You must use different commands to change a heading than the ones you use to create it. For example, the delete key backspaces only in the Edit mode; when you're adding a new heading, you use the left-arrow key instead. To move a heading one position, you use a different menu than the one you would to move it several.

The one-line menus are often nested several levels deep, and frequent access of the program disk is the rule. Thus, you have a tool that emphasizes careful method over speed.

First Draft

If you're willing to trade outline size for snappier processing, you might want to try First Draft from Scholastic Software. This new school-oriented program includes a teachers' edition with useful writing exercises. But it also possesses less-desirable features: It's copy-protected, it runs under DOS 3.3 (although a ProDOS version is under development), and its file-size limit is small (about 30K). I also ran into a printing problem with it on my Apple IIc.

Given those quirks, though, First Draft offers a fast and flexible contrast to ThinkTank. Headings aren't limited to single lines; they can go on for pages. To create a new heading, you press Return. To change an old heading, you move the cursor to it and start typing. If you want to convert a heading to a paragraph (or back again), you press Control-P.

For student projects, the limited file size may not be a problem. If you're organizing notes for more serious writing, though, you'll find the limit annoying—especially because you get no warning before you hit the wall.

First Draft offers four printing styles, and each can be saved to disk. The program creates standard text or binary files. (One unusual touch: When you change an outline, First Draft automatically backs up the original.)

I had no trouble printing a new outline, but after I saved or loaded a file my printer no longer responded. When I used the software with an enhanced Apple IIe, however, it worked fine. Scholastic says that it's fixing this problem and will provide a free upgrade to any IIc user who has difficulty. In fact, the upgrade may be available by the time this article appears. For further information, call Owen Long at Scholastic—(212) 505-3675.

ProDOS Outliners

If you insist on ProDOS, your main choice is Megahaus' ThinkWorks, a program targeted at AppleWorks users. It emulates everything from the file-card menus to the two-disk start-up. You can save a ThinkWorks outline as an AppleWorks word-processing file and load it into AppleWorks with all the margins and tabs intact.

If you want to use ThinkWorks outlines with another word-processing program, you'll have to use AppleWorks as an intermediary.

Many of the AppleWorks word-processing commands have equiv-

PROCESSORS

One of these programs may bring you closer to that magic moment when your mind and hand go together.

PHOTOGRAPHY BY MICHEL TCHEREVKOFF

Once you've piled up enough prose, you can begin cutting and pasting your way to a first draft.

alents here: open-apple/M, for example, moves a block of headings. Printing is simple to set up. Also on the positive side, you'll find that outlines can expand to fill a disk, you can cut and paste between outlines, and you can run the program from a RAM card. In addition, ThinkWorks works with three printers—the ImageWriter, the Scribe, and "Other" (your own printer setup)—which is two more choices than other outliners offer.

But there's bad news too. A single heading with all its paragraphs is limited to about 100 words; you can't format a disk from within the program; and ThinkWorks has some odd priorities—you can undo the deletion of a few words but not the deletion of a whole section.

More than that, I found the numbering scheme a hindrance. Instead of showing structure with unobtrusive symbols, ThinkWorks inserts section numbers on the screen. Formal outlines are fine for presenting a finished product, but they aren't the best way to nurture

a budding idea.

A teachers' edition includes several structured activities. Most are exercises in list making rather than writing, which isn't surprising. List making is what ThinkWorks does best.

Outliner Del Conde

At least the structure and terminology of ThinkWorks are familiar. Not so with the other ProDOS outliner on the market, Outliner Del Conde from Del Conde Ventures. Instead of outlines, this program gives us trees, with branches and nodes. Instead of expanding a heading, the program "moves into the foliage." Along with an Erase command, it offers Prune.

When you want to add text to an idea, Outliner Del Conde provides only 255 characters—barely 40 words. Everything is in proportion, though: The program's files have a 13K maximum.

No help screens are available, and they are sorely missed. The outline screen has a row of cryptic one-letter prompts, with no clue about what they mean. You'll need to keep the manual close at hand.

Comparing sections is difficult, because the program shows only one level of the outline at a time. It does have one feature that other outliners could envy: the Branch command. You select your "target node" and then go through the outline, marking other headings to put under it. The restructuring takes place on the spot.

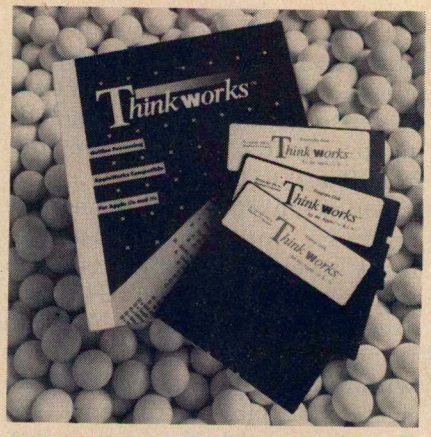
Outliner Del Conde is fast and inexpensive, but its limited text handling makes it unsuitable for extended planning.

Calliope

You may not need the tight organization that outlines offer, but you still need structure. If you find formal outlines daunting, another technique may prove useful.

Many writing instructors recommend "idea mapping." You draw a circle with the main subject in the center of the page and then surround it with topics and subtopics. After a few minutes, a clear sense of structure emerges.

Calliope from Innovision is the only program that offers such a visual approach to structure. This ProDOS program mixes hi-res graphics and text to give you a tool



for computer brainstorming. To enter an idea, you press Return, which causes a small box to appear. Each box has a label and a corresponding text screen, with room for about 170 words. You can shuffle the ideas around, copy them, and draw lines between them.

Calliope doesn't nest ideas. It throws them together, and it does so in a way that encourages fast, creative exploration.

Unfortunately, once you get past the initial stages of thinking, Calli-

OUTLINING

MAXIMUM FILE SIZE	
MAXIMUM INDENTATION	
MAXIMUM PARAGRAPH SIZE	
MOVES/COPIES HEADINGS	
SORTS HEADINGS	
UNDOES DELETED HEADINGS	
SEARCHES/REPLACES	
CUTS AND PASTES BETWEEN OUTLINES	
PRINTS SECTION NUMBERS	
FORMATS DATA DISKS	
CREATES PRODOS TEXT FILES	

NA = Not Applicable

THE OUTLINERS

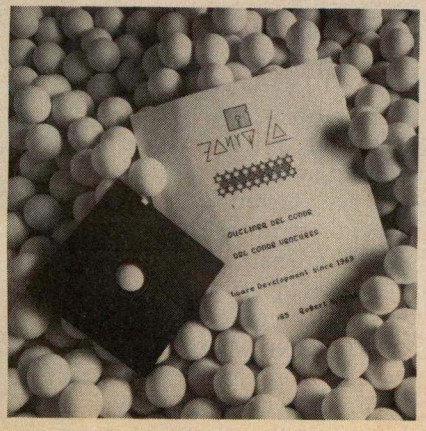
THINKTANK	FIRST DRAFT	THINKWORKS	OUTLINER/DEL CONDE	CALLIOPE 128	SWYFTWARE
Limited by disk	30K	Limited by disk	13K	40K	40K
No limit	17 levels	10 levels	No limit	NA	No limit
2048 chars.	30K	600 chars.	255 chars.	1024 chars.	40K
Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	No	No	No	No
Yes	No	No	No	Yes	Yes[2]
Yes	Search only	Yes	Search only	No	Search only
No	No[1]	Yes	No	No	Yes[3]
Yes	Yes	Yes	No	NA	No
Yes	Yes	No	No	No	Yes
Yes, through conversion utility	No[4]	No[5]	Yes (directly)	Yes (directly)	Yes, through conversion utility

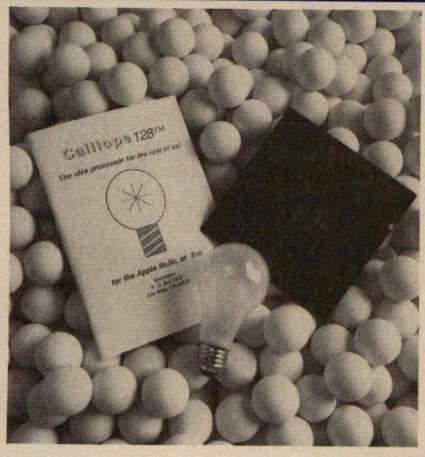
1. Can append a complete outline from disk to the outline in memory. 2. The most recent block deletion remains in the "insert buffer."
3. Highlighted text can be "copied up" to another file. 4. Creates convertible DOS 3.3 files. 5. Creates AppleWorks processor files directly.

ope becomes less useful. It's aimed at secondary-school students, and other users are likely to feel cramped. You can have only 40 ideas in each file, and each has a fixed amount of text.

Like ThinkWorks, Calliope is unable to format a disk, but it has an even more serious problem. In the text mode, if you hold down the open-apple key and press the cursor arrow, the cursor skips to the next word. If there are two spaces at the end of the last line, skipping there will crash the program.

Just before press time, I was able to test a prerelease copy of version 2. The catastrophic bug has been removed, and several features have been added. In the text mode, the Delete key now deletes backwards, as it does in most Apple II word-



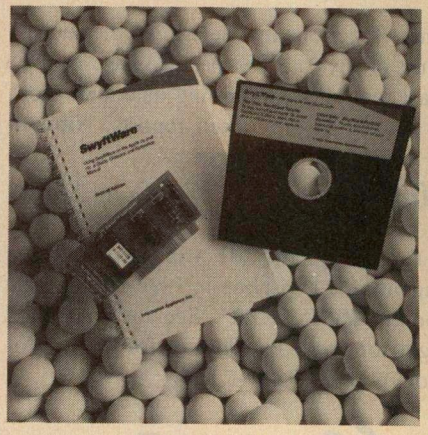


processing programs. In printing, idea labels appear in boldface, with blank lines separating them from the text. You can substitute a standard hi-res graphics file for the "text" of an idea, and you can step through related ideas—or pictures—with a single keystroke. So the idea processor now doubles as a slide-show processor. Innovision, by the way, offers free upgrades to registered owners of the program.

SwyftWare

If everything else fails, you still have one tactic left: dive in and write—even if you have no idea what you want to say. The act of writing helps you think, and the faster you write, the better. Once you've piled up enough prose, you can begin cutting and pasting your way to a first draft.

For rapid writing, you need rapid software. Most word-processing programs allow you to pour out a stream of text, but none of them comes close to the speed of SwyftWare, currently marketed by Micro-Chem. This program, which uses a proprietary operating system, can load itself and a file in 12 seconds from a cold start; clone itself onto each data disk, so you never need more than one drive; and save its files to an unformatted disk in 10 seconds. (These times, by



the way, apply to the disk version of the system. A hardware version, the SwyftCard, is slightly faster.)

SwyftWare also has the advantage of having only five commands. If inspiration strikes, you won't lose it waiting to get past the menus.

"My copy of AppleWorks is now gathering dust!"

—Mark Shaffstall, –former AppleWorks user

"If you use AppleWorks, switch to Nine to Five... It's report writing capability is without peer, and it's smoothly integrated mail-merge was the answer to my prayers. At $199.95, this program is a steal!"

–Bryant Sandburg, *Nine to Five enthusiast*

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–inCider *- Nov. '86*

"Nine to Five™ ... is a nearly ideal tool for people who build collections of facts and then want to get at those facts quickly and easily in reports and form letters."

–A+ *- Dec. '86*

"At the risk of being accused of heresy against AppleWorks, I'd like to say that Apple II owners have rarely had a truly powerful, yet easy-to-use, database manager and report generator. Now, however, there's Nine to Five–a program with enough muscle for business applications yet simple enough for home users...

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CIRCLE 288 ON READER SERVICE CARD

With SwyftWare, you "leap" around within a file by holding down the open- or closed-apple keys and typing the text you want to locate. It feels awkward at first, but you've arrived at your destination by the time you finish typing. Every aspect of the program reflects that speed. It's almost impossible to outtype it, even if you're pushing a large amount of text in front of the cursor.

SwyftWare should appeal to writers whose time is fragmented. You can start it up, scribble a few notes, and quit in less time than it takes the fill the bathtub.

None of these programs can create finished output. Eventually you'll have to move your work to a word-processing program and carry on from there. Fortunately, each program offers a way to do so—either with its own conversion utility or by creating an easily converted text file.

Organizing your thoughts is hard work, but one of these programs may bring you closer to that magic moment when your mind and hand go together. And when that happens, your words almost process themselves. +

Tad Davis has a master's degree in playwriting. He is now working as a systems analyst at a university in Philadelphia.

VITAL STATISTICS

ThinkTank 1.1
Living Videotext, Inc.
2432 Charleston Road
Mountain View, CA 94043
(415) 964-6300
List Price: $150
Requires: Apple IIe, IIc, or IIGS; 64K RAM; two 5¼-inch disk drives or a hard disk formatted for Pascal 1.1; 80-column card (40-column version available for II Plus). Pascal 1.1; not copy-protected.

CIRCLE 367 ON READER SERVICE CARD

First Draft
Scholastic Software
730 Broadway
New York, NY 10003
(212) 505-3410
List Price: $87.45 (educational), $69.95 (consumer)
Requires: Apple II Plus, IIe, IIc, or IIGS; 64K RAM; one 5¼-inch disk drive. DOS 3.3; copy-protected; includes 40/80-column display option.

CIRCLE 368 ON READER SERVICE CARD

ThinkWorks 1.0
Megahaus
6215 Ferris Square
San Diego, CA 92121
(619) 450-1230
List Price: $62 (currently running a $49 special)
Requires: Apple IIc, or IIe with 80-column card (IIGS version "in the works"), one 5¼- or 3.5-inch disk drive, 128K RAM. ProDOS; not copy-protected.

CIRCLE 369 ON READER SERVICE CARD

Outliner Del Conde, Version 64P1.1
Del Conde Ventures
41 Forrest Road
Randolph, NJ 07869
Written inquiries only
List Price: $39.95
Requires: Apple IIc, IIe with 80-column card, or IIGS; 64K RAM; one 5¼-inch disk drive. ProDOS; not copy-protected.

CIRCLE 370 ON READER SERVICE CARD

Calliope 128
Innovision
P.O. Box 1317
Los Altos, CA 94023-1317
(415) 964-2885
List Price: $59.95
Requires: Apple IIe, IIc, or IIGS; 128K RAM; one 5¼-inch disk drive. ProDOS; not copy-protected.

CIRCLE 371 ON READER SERVICE CARD

SwyftWare, Version 1131 (disk version)
Micro-Chem
P.O. Box 8429
San Diego, CA 92102
(619) 236-9319
List Price: $79.95
Requires: Apple IIc, or IIe with extended 80-column card (hardware version runs on IIe with 80-column card and 64K RAM)—IIGS not recommended because of keyboard and serial-port differences; one 5¼-inch disk drive. Proprietary operating system; not copy-protected.

CIRCLE 372 ON READER SERVICE CARD

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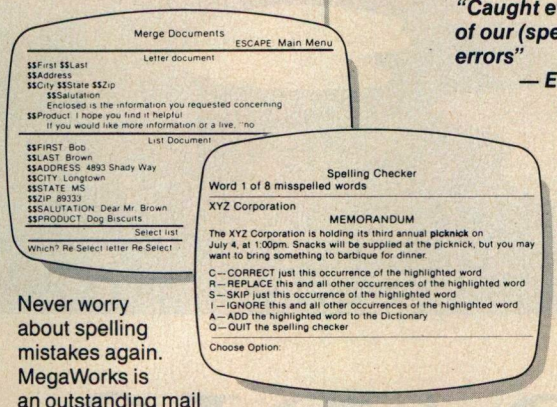

"Caught every one of our (spelling) errors"
— Electronic Learning

Never worry about spelling mistakes again. MegaWorks is an outstanding mail merge and spelling correction program designed exclusively for use with AppleWorks. The merge facility lets you combine database information with word processing documents creating personalized form letters. The 40,000 word dictionary checks your document for misspellings and corrects them as you view them in context.

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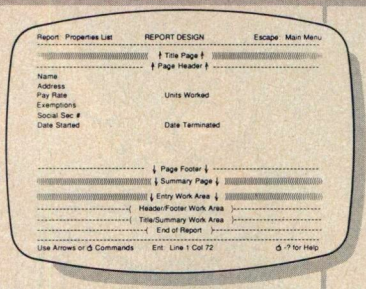
ReportWorks $49.95



"ReportWorks is the most important AppleWorks add-on available." ***— A+***

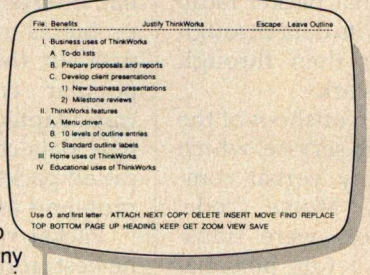
Making decisions is easy with the right information. ReportWorks adds powerful new report generation capabilities to AppleWorks, creating reports, tables, lists and full-page forms from existing AppleWorks database and spreadsheet files. It performs all calculations, such as adding taxes, adjusting discounts, looking up prices and totaling invoices. And, it provides the ability to repeatedly sort, search and select the information to be included in the report.

- ▲ POWERFUL free-form design features for creating reports and forms.
- ▲ INTEGRATION of data from several different files in one report.
- ▲ SORTING of reports (up to 3 levels) after they're created.
- ▲ AUTOMATIC pagination, dating, and running totals.
- ▲ MORE math functions than AppleWorks alone.
- ▲ ADDITION of headers, footers, title & summary pages, etc.

System Requirements: Apple IIe (enhanced), IIc (128K min), IIgs; Two disk drives recommended for ReportWorks and ThinkWorks; Optional: most hard disks, RAM cards, UniDisk 3.5

ThinkWorks $49.95

"A well-made outline processor. . ." ***— A+***



Good planning means success, so ThinkWorks is a must for those reaching for the top. This easy-to-use outlining tool enables you to efficiently organize nearly any type of information — for business, home or school. Outlines can be expanded, rearranged, and merged with familiar AppleWorks commands. Use it by itself or as a powerful add-on tool.

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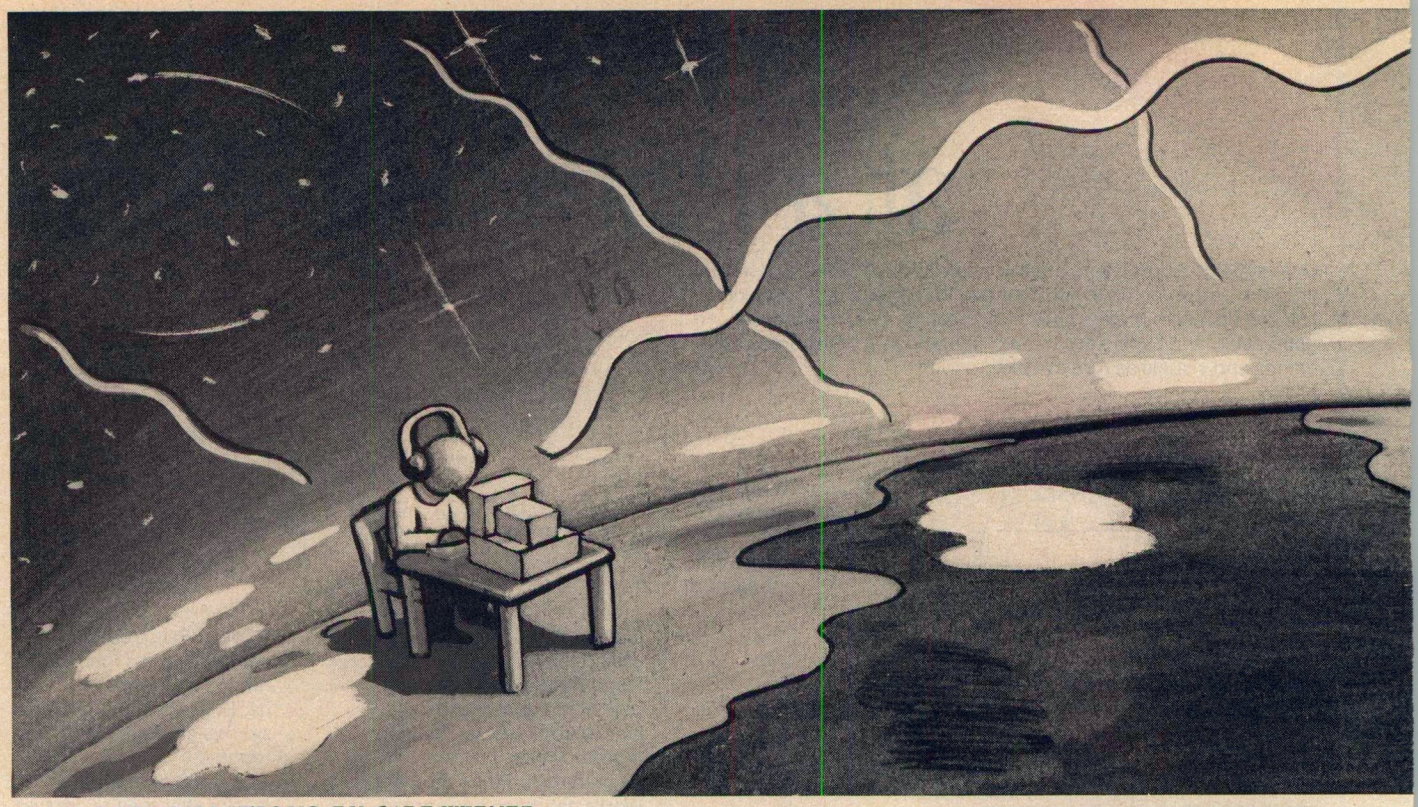


TELECOMMUNICATIONS *BY GABE WIENER*

PACKET RADIO:

Connect yourself to packet radio and say good-bye to those high phone bills.

Almost every *A+* reader has been exposed to computer telecommunications in one way or another. Even those of you who don't already own modems no doubt have read articles on the subject. Yet, in spite of the immense popularity of modem communications, it has some bothersome aspects: busy signals; garbled data; and, above all, enormous phone bills. Remember the first bill you received from Ma Bell after you started using your modem? It probably set you back almost as much as the modem.

If you're thinking of broadening your computer-communication horizons and are technically inclined, there's another road, one that in the long run is usually less expensive, more flexible, and just as enjoyable.

Bring On Packet Radio

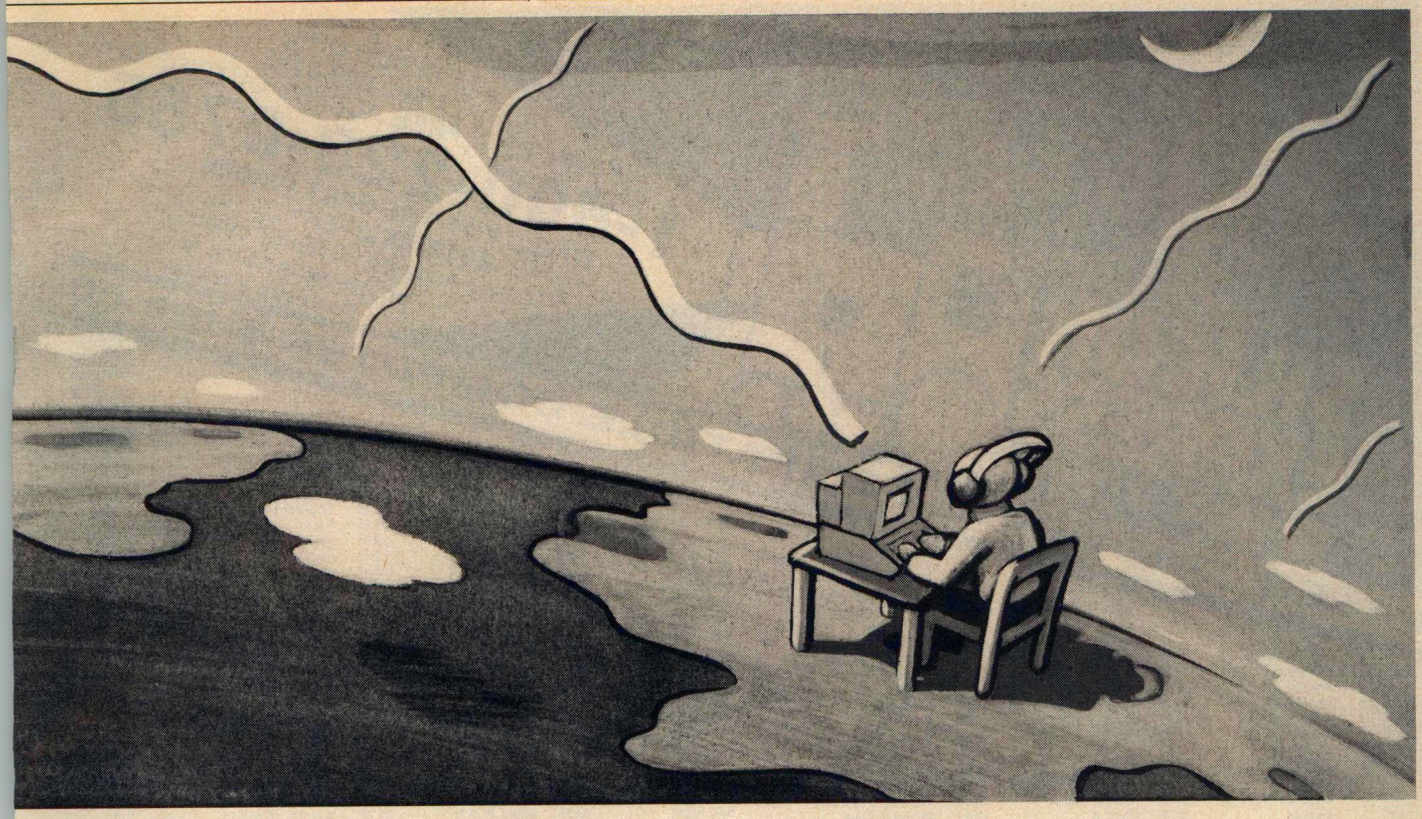
Packet radio is a form of radio communications that is similar in many respects to traditional data exchange over the telephone network. The biggest difference between the two is that packet radio sends and receives its data through radio links, rather than through the telephone network.

Packet radio is an offshoot of the amateur (ham) radio service, which originally used only verbal communications and Morse code. Ham-radio operators were transmitting data long before personal computers were available. In the early 1950s, inventive ham operators bought or salvaged old mechanical Teletype terminals, modified them, and connected them to their ham-radio equipment, creating radioteletype, or RTTY (identical in principle to modern modem communications, except that it uses a coding scheme called Baudot). Later, ham operators adopted conventional ASCII systems.

Radioteletype had several problems. First, the system was slow. It usually ran at 50 bits per second (bps). Besides having speed limitations, radioteletype was also often plagued by fluctuating atmospheric conditions, which produced signal interference and static. These problems invariably led to garbled data. In the late 70s, however, a popular commercial technology was adapted for amateur use. This new data-communications system, called packet radio, eliminated the problems associated with RTTY.

Packet radio is amateur radio's newest frontier. Much like the telephone modem network, packet-radio channels are filled with bulletin-board systems that have mailboxes and round-table discussions. The packet-radio system also has many features that would make modem users envious. For example, each and every message you send by packet radio has automatic error detection and correction,

ILLUSTRATION BY BARTON E. STABLER



Modems Have Met Their Match

meaning that you will never see garbled data on your screen. The system performs a check on every block of data it receives, and if the checksums don't match, the sending station automatically retransmits the block.

The real beauty of packet radio, however, is that it's a "smart" system. A Terminal Node Controller (TNC) supervises each packet-radio station. The TNC is a modem with a built-in miniature computer. The unit has an RS-232C port and attaches to any computer running terminal software. Rather than connecting to a phone line, the TNC connects to the speaker of a radio receiver and to the microphone of the radio transmitter. When the computer sends data to the TNC, the TNC breaks that data into 128-byte blocks that are similar to Xmodem blocks. These data blocks are called bursts or packets, and each packet is encoded with its own routing information (i.e., where it came from, where it's going, and how it should get there.) The packet is then transmitted, and any listening station can pick it up. When a packet-radio station "hears" a burst, it automatically checks the address of the incoming signal. If the packet is addressed to the station's operator, it appears on the computer screen. Otherwise, the system ignores it.

Because each packet has individual addressing, multiple conversations can take place on the same channel without mutual interference. Station A can talk to station B on one channel, while six other stations can talk to each other on that same channel simultaneously. None of the stations know that other conversations are taking place. You may be asking, "Don't the transmissions collide with each other?" Thankfully, TNCs "listen" to the channel before they send their data. If a TNC detects a signal, the TNC waits until it is finished, which is where the 128-byte packets come in handy. Because the bursts of data are so small, each TNC gets a turn to send. This system of channel sharing makes packet radio ultra-efficient.

The type of signal that most packet-radio operations use doesn't go more than several miles because of its relatively short wavelength in the VHF (very high frequency) spectrum. To make the system truly effective, a network of repeater stations (similar to the large microwave repeater towers that you see on the sides of major highways) receives weak signals and repeats, or retransmits, them. Repeater stations process the signals digitally, so ham operators often call them digipeaters. Moreover, any packet station on-line can act as a digipeater. So while our hypothetical stations A and B are chatting away, two other stations might be talking to each other, using station A as a digipeater. Station A's TNC receives the incoming signal and retransmits it to its designated recipient, all without interfering with station A's conversation. Using this technique, stations several

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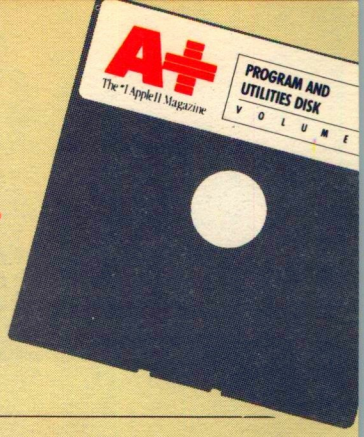

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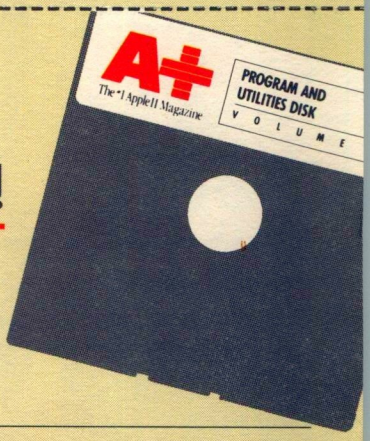

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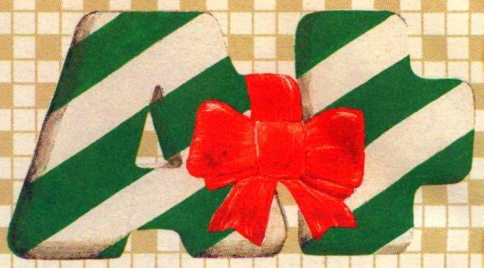

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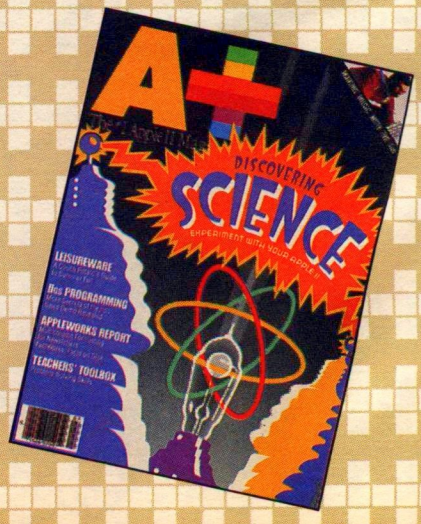

Author Gabe Wiener at home, surrounded by his computer and radio equipment

hundred miles apart can communicate by relaying through other stations along the way.

Packet-radio electronic mail has the edge over the telephone BBS network. Packet bulletin-board systems (PBBSs) handle electronic mail on packet radio and have features similar to telephone BBS's: public messages, mail, downloading, news bulletins, and files of general interest. And, like telephone BBSs, PBBSs are run by sysops. PBBS mail also has a "store-and-forward" system. In other words, mail you leave on one PBBS is forwarded automatically to the PBBS nearest the recipient. Under this system, each user normally adopts a "home" PBBS, where other systems forward all incoming mail from other systems. Telephone BBSs cannot afford to use this approach, because the telephone charges are too high.

As with other varieties of ham-radio operation, displaying all incoming packets and "listening in" to other people's transmissions are perfectly acceptable. In fact, these practices are encouraged because it is illegal to encode or obscure the meaning of amateur-radio transmissions. One way to establish a dialogue is to monitor a channel, wait for someone to finish a conversation, and then send a connect request. One caveat: Don't expect to use packet radio as an inexpensive way to advertise a service or sell products. This kind of activity is forbidden by the FCC. (Amateur radio is solely for personal communications, and no commercial activities are allowed. For instance, transmission of this article, for payment, would be classified by the FCC as "operation of an amateur radio station for remuneration," a prohibited practice.)

If you're seriously interested in getting involved, you can't simply buy a box and plug it into your computer's serial port—you'll first need an amateur-radio license. Amateur-radio operators have to be licensed by the Federal Communications Commission, which grants five classes of amateur licenses. All of them except the lowest, the Novice class, allow packet operation. In order to obtain a license, you need to pass a Morse-code receiving test as well as a written exam on radio theory, rules, regulations, and operating principles. It really isn't as difficult as it might seem. An amateur-radio license can bring with it many other interesting types of communications, including the use of high-frequency shortwave bands, which allows you to send your voice (or your picture via ham TV) around the world.

What else do you need in order to get onto the packet network? You need a terminal or computer for typing and displaying text, an FM amateur transceiver, and a Terminal Node Controller, as well as a small space to put up an antenna. A VHF antenna for packet work is about four feet high and can be installed on a windowsill, your roof, or any other convenient place. Other than the license and the equipment, all you need is an interest in radio communications.

What is the cost of a packet-radio setup? Not including the terminal, the whole packet system can run you about $400. A top-of-the-line system can be put together for $600–$700, but then again, a good modem costs about $300.

Surely amateur radio isn't for everyone—getting a license requires some work and discipline—but if you enjoy making friends with other people and sharing your hobby with other aficionados, or are intrigued by communications technology, it might just be for you.

Anyone who would like further information on amateur radio should write to The American Radio Relay League, 225 Main Street, Newington, CT 06111. ✚

Gabe Wiener has been a licensed amateur-radio operator for 8 years and has been involved with packet radio for the past 3. He is 17 years old and is a senior at the Fieldston High School in New York City.

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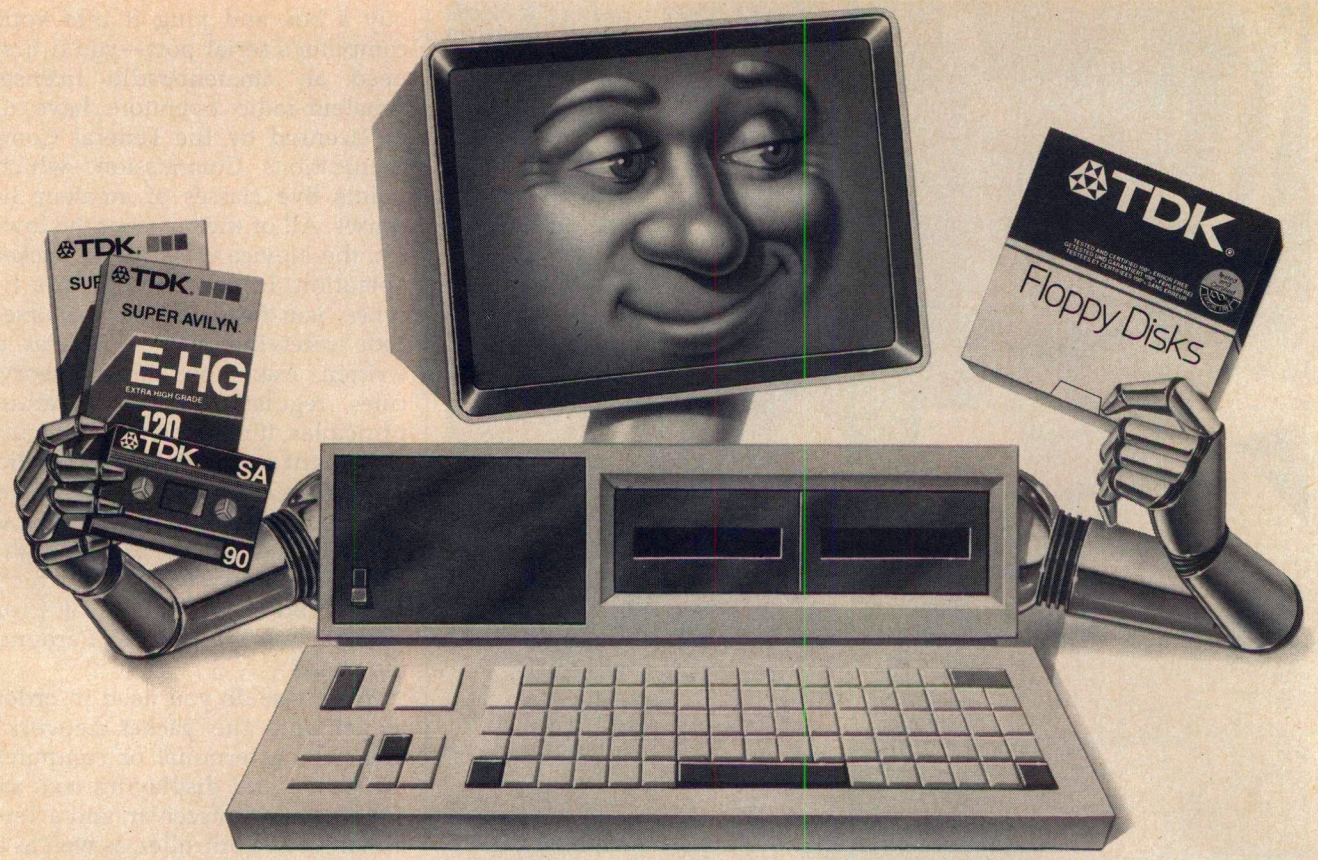

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BY ROBERTA SCHWARTZ AND MICHAEL CALLERY

Outdoing the Macintosh's resolution on your Apple II-series computer

THE GRAPHICS TOOLKIT

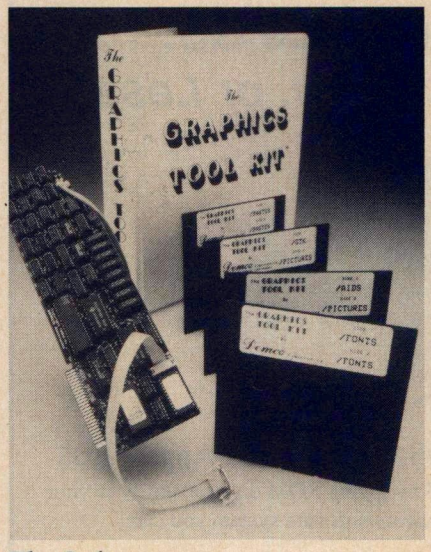
Judging from the popularity of programs such as The Print Shop, Certificate Maker, The Newsroom, and so on, more and more of you are using your computers to produce printed material. Does the Mac, with its higher resolution and its ability to freely combine text and graphics, still make you envious? Would you like to create higher-quality signs, posters, charts, and fliers with your Apple II-series computer? Then The Graphics Toolkit, a hardware/software combination from Demco Electronics, may be just what you need.

We first looked at The Graphics Toolkit (GTK) more than a year ago and thought its use would be limited to certain niche markets. In its latest incarnation, with a lower price and improved software and hardware, however, The Graphics Toolkit is a winner.

The GTK board installs in any slot, with the usual exceptions: slot 0 on Apple II Plus computers and slot 3 on 80-column Apple IIe computers. Rerouting the Apple video signal through the board, the GTK replaces it with one that generates a higher-resolution display of 640 horizontal pixels by 768 vertical pixels, compared to Apple's standard 280 × 192.

The Graphics Toolkit also provides a standard Apple mouse port, although a mouse doesn't come with the system. The AppleMouse IIe (removed from its own circuit board) works well with the GTK and with other software when the GTK isn't activated.

The GTK produces an interlaced video signal; therefore, a high-quality, long-persistence monitor is strongly recommended. Some inexpensive monochrome monitors may flicker unless you carefully adjust the contrast and brightness controls.



The Software

The Toolkit's software consists of one major application program and several useful tools. Only software written especially for The Graphics Toolkit can take advantage of the high resolution it provides; other software runs unchanged. Although the board's vertical resolution is 768, you can see only 384 scan lines (half the vertical display) at one time on the screen. As you work, the software automatically scrolls up or down the page.

Running under ProDOS, the major application is, as you might expect, a drawing program. It offers the fundamental drawing tools: points, line, and connected lines. You can draw points with any of 5 different-size brushes or with an airbrush, in any of 16 patterns. The program allows you to load and use fonts and standard Apple shape tables. It also has Cut, Copy, and Paste functions and a Zoom mode that allows you to edit your drawing, pixel by pixel. When you reach the bottom or top of the screen, the display automatically jumps to the next segment with your drawing function still active, making it easy to draw lines that extend the full length of a page. The GTK provides two graphics pages to work on, and the Cut and Paste functions allow you to move graphics easily from one page to the other.

You control the program with either the keyboard or the mouse. If you use a mouse, you select most commands from the menu bar, which stretches along the top of the screen. We applaud Demco for providing both menus and command keys.

The package also includes a shape-table editor, a font editor, a disk of clip art, a disk of fonts, and a GTK system file that lets you use the Graphics Toolkit screen from Applesoft as simply as you use standard Apple screens. The clip

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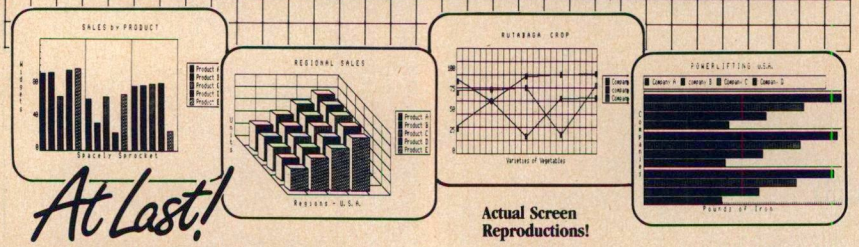

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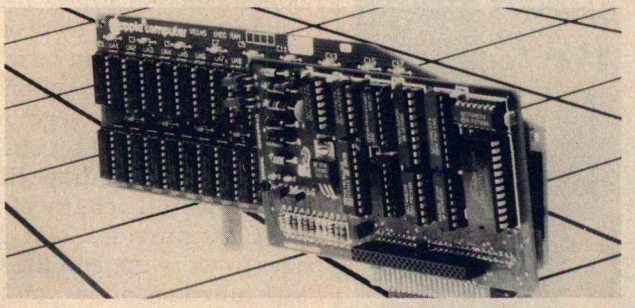

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art, by the way, is as good as, or better than, any we've seen for Apple II-series computers—artistically, that is. Unfortunately, much of it, such as the charming miniportraits of singing stars, has limited use.

The package includes lots of other small goodies and utilities, such as a program to convert Fontrix fonts to the GTK format and a program to load Apple hi-res graphics to the Toolkit screen.

Still Room for Improvement

The drawing program lacks several major features. We especially miss the geometric shapes that we've come to expect in every drawing program: circles, ovals, rectangles, and polygons. We might forgive the absence of rectangles and polygons (they're easy to create with lines), but creating an acceptable circle or oval manually is difficult.

We also think a Show Page function is essential in a program that does not display your whole work area at once. Without such a function, you must guess about placement of an object on the page. A ruler option might be an acceptable alternative. The only other package we know of that allows for comparable full-page, printed output is Fontrix. Fontrix, still one of our favorite Apple II programs, is software only and is thus considerably less expensive, but it's geared more to text output, and its drawing tools are primitive. The Graphics Toolkit is better suited for full-page drawings, thanks to its higher resolution and features such as lines, fonts, Cut and Paste options, and shape-table stamping.

How does the output of The Graphics Toolkit compare to that of the Macintosh? With a resolution of 640 horizontal dots, The Graphics Toolkit's screen wins by 128 pixels per line. Although it has more dots on the screen, the printed output is about the same as that of the Macintosh. If your printer can provide GTK's "near letter quality" mode (180 dots per inch), the printouts will be superb. Apple ImageWriter and DMP printers, among others, offer this mode.

The company seems to be genuinely responsive to the needs of GTK owners and offers low-cost ($15) upgrades of the software. If you are using older versions of the software, we recommend upgrad-

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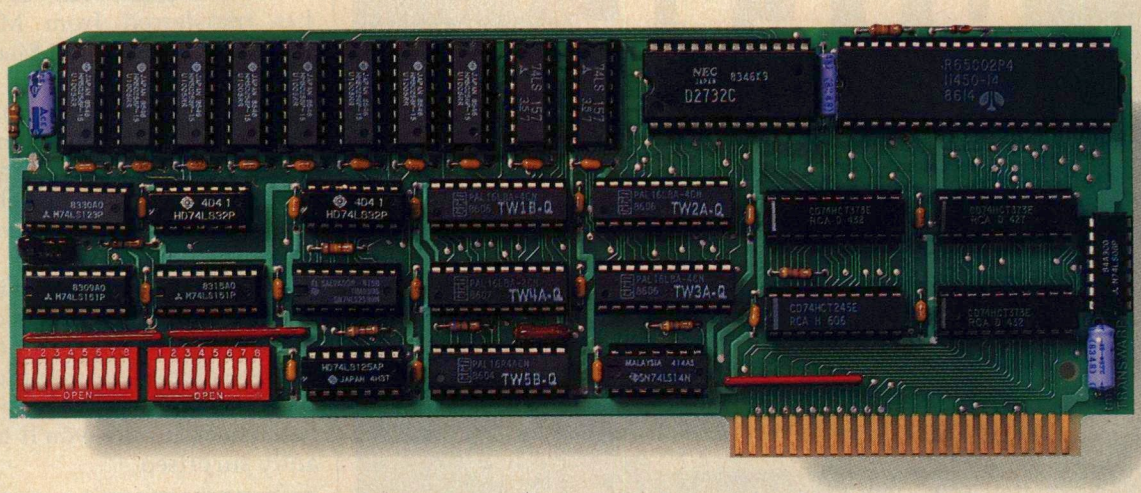

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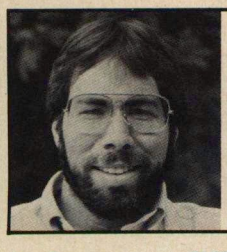

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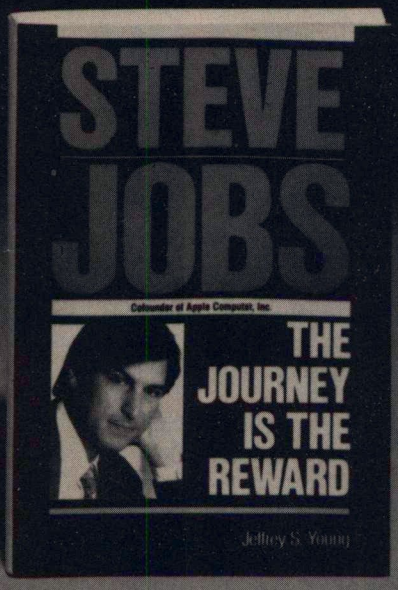

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ing to the current version. A bimonthly newsletter keeps users informed of upgrades and new add-on products. The GTK has a one-year warranty.

Demco offers a range of supplementary clip art, some of which it has transferred from Macintosh products. Three disks, Mac Art for Business by Wyley and MacPic! Volumes 1 and 2 by Magnum, are currently available, and more are planned. In the hardware realm, you can purchase a special version of the ComputerEyes video digitizer for the GTK.

The Graphics Toolkit from Demco Electronics provides you with truly flexible monochrome high-resolution graphics resources. If such resources appeal to you, check it out—you'll be pleasantly surprised. ✚

Since our review of The Graphics Toolkit, Demco has added several new features to the product. Perhaps the most exciting of these is the ability to read Macintosh clip art directly from the Toolkit. According to Demco, you just pop a Macintosh disk into your Apple II 3.5-inch disk drive and select the Macintosh paint file you want to use. Along the same lines, Demco has added new file utilities that let you delete, rename, and unlock files without exiting to BASIC. Another addition is a charting module that allows you to create pie, bar, or line charts from manually entered data or from text files created with AppleWorks. These changes reflect Demco's continued evolution of its product.

VITAL STATISTICS

THE GRAPHICS TOOLKIT
A hardware/software combination that lets you create high-quality posters, charts, and flyers with your Apple II-series computer.

CPU: *Apple II Plus, IIe, or IIGS conversion (circuit board is too large to fit into a standard GS case)*
RAM: *64K*
DISK DRIVES: *one 5¼-inch (two recommended)*
OTHER: *monochrome monitor (high-persistence monitor recommended), printer*

OPERATING SYSTEM: *ProDOS*
COPY PROTECTION: *no*
MOUSE: *recommended*
LIST PRICE: *$395*

Demco Electronics
10516 Grevillea Avenue
Inglewood, CA 90304
(213) 677-0801

CIRCLE 360 ON READER SERVICE CARD

You never knew your Apple IIGS™ could sound so good.

Buy a Bose® RoomMate® powered speaker system with your new IIGS and Bose will send you an exciting music product – FREE.

Turn your IIGS into a high fidelity musical tool.

If you're a music maker, your system is not complete without the RoomMate powered speaker system from Bose – a world leader in innovative audio products.

The RoomMate system unlocks the full potential of the IIGS's digital sound synthesizer chip. Simply plug the RoomMate system into the IIGS's earphone jack and *your room is filled with faithfully reproduced sound* – from a symphony to a human voice to a crashing wave.

We've taken some of the best features of our top-of-the-line audio products – a 4.5" full-range driver, an active equalizer, distortion limiting circuitry – and put them into a self-contained, affordable system. It also brings out the best in portable CD players, keyboards and personal stereos.

Choose the Special Edition Platinum RoomMate system.

Since looks are as important as sound, we designed a Special Edition system with a platinum cabinet and grilles to match your IIGS.

Get a high quality music product free – up to a $79.95 value.

If you buy an Apple IIGS and Bose RoomMate system before December 19, 1987, we'll send you one of the following free:

Activision's *The Music Studio*™

This professional-quality music composition tool is for amateurs and professionals alike. You can compose and edit music using a library of 45 digitized instrumental sounds, play up to 15 instruments at once, and print out sheet music. You can even play your compositions through electronic musical instruments like keyboards and drum machines.

Electronic Arts' *Music Construction Set*®

Designed expressly for the IIGS, *Music Construction Set* makes it easy to compose and edit music. You can write 15-voice music using professional notation found in no other Apple IIGS software, then play your work on over two dozen new digitized instruments that sound sensationally real. When your work is done, print out high-quality sheet music.

Great Wave's *KidsTime*™ *II*

Created for children aged three to ten, *KidsTime II* has two educational programs emphasizing creativity, exploration and skill development. *KidsNotes* allows children to explore many aspects of music and create their own songs on a piano screen keyboard. *ABKey*, a fun letter recognition/keyboard skill program, contains many levels of challenge.

MDIdeas' *SuperSonic*™ Stereo Card

Hear your Apple IIGS in true stereo! *SuperSonic* taps the powerful new Ensoniq™ sound chip of the IIGS so you can hear the exciting stereo sounds of popular music software, like the three mentioned above, in real stereo. Advanced circuitry and multi-stage filters assure distortion-free audio.

Act now.

Go to your authorized Apple® dealer and audition the IIGS paired with the Bose RoomMate system. Or order a RoomMate system by calling (301) 796-3980. But hurry. This Free offer expires December 19, 1987.

BOSE®
Better sound through research.

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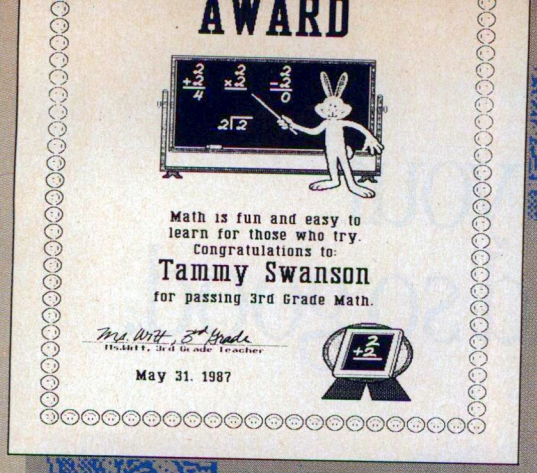
Apple IIGS is a trademark of Apple Computer, Inc.
Bose and RoomMate are registered trademarks of Bose Corporation.
Music Construction Set is a registered trademark of Electronic Arts, Inc.
KidsTime II and Great Wave are trademarks of Great Wave Software.
The Music Studio is a trademark of Activision.
SuperSonic is a trademark of MDIdeas.

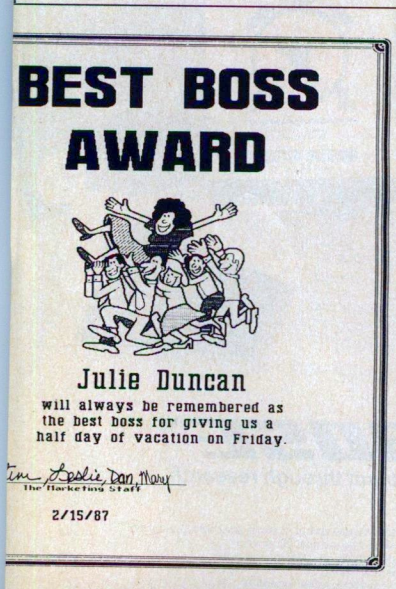
Software: *The Music Studio* by Activision.

CIRCLE 313 ON READER SERVICE CARD

Creating certificates with Certificate Maker and Award Maker Plus

PRAISE IN





Does your team have a member who consistently saves the game? Did your friend start a fire while barbecuing the steaks? Did your students write their first computer programs? At home, in the office, in school, and at the club, many people deserve recognition for outstanding as well as dubious achievements. Now you can show them you care.

Two programs for the Apple II family of computers let you create and print personalized certificates to honor achievements, make announcements, encourage efforts, or poke fun at idiosyncrasies.

First came Certificate Maker, followed by Award Maker Plus. In concept and design, the programs are similar. You start with templates of more than 200 partially complete certificates, awards, licenses, and diplomas. Some of the templates are specific, with titles such as Mathematics Award, Most Coffee Breaks Award, and Top Dog. Other templates are multipurpose, with titles such as Diploma or Certificate of Improvement, and some allow you to enter your own titles. Each provides space for the recipient's name and achievement and the donor's name. Most templates have appropriate illustrations and a line for the date and the donor's signature.

Figure 1: Samples of awards created with Certificate Maker, including one (bottom) sent to us by reader Jeff Whitman from Tewksbury, MA. Certificate Maker provides a great variety of templates and five typefaces.

It's Easy to be Thoughtful

A finished certificate consists of a template, a border, title text, and body text. The programs step you through the selection process as you go from screen to screen.

You select the templates for each program, illustrated in the manuals, by number. To choose a border and typeface, you move your cursor through a list of choices. The programs display the borders and typefaces on the screen as you go through the list. As you enter text, it automatically centers on each line.

Entering date and signature text is optional. You can leave these

PRINT

lines blank or type some other information. All that's left to do is print. Unfortunately, neither of the programs has a preview option. You don't see your certificate until it's printed. If you're unhappy with the finished document, you can use the Escape key to back up a step at a time and make the necessary changes, or you can start over from scratch.

After you've printed your certificate, you'll find a line for your handwritten signature. Sign it and then affix one of the seals and stickers that come in the packages. Present your certificate and make someone happy or humbled.

An excellent feature in both these programs, especially for teachers and club leaders, is the name wild card. This option lets you insert different names into identical certificates so that you can present personalized awards to multiple people. After creating a name file, you save it to a separate ProDOS data disk. Then, when you're creating your certificates, you can have the program read the names from the list.

Both programs do exactly what they purport to do; they allow you to create attractive personalized awards. From the above description, you might get the impression that the programs are exactly the same. They work pretty much the same way, and a certificate is a certificate, right? Not quite. You'll notice significant differences in the style of the certificates that each program produces.

Certificate Maker

Certificate Maker is the original and the better choice if you want a huge variety of delightfully illustrated tongue-in-cheek awards. The documentation is slicker and more comprehensive, and the package includes a much greater variety of templates. The program offers more border choices (24), and it has five typefaces in two sizes each. You can change type size from one line to the next.

The border and the design and boldness of the typefaces make the certificates more appropriate for fun than for professional use. Cer-

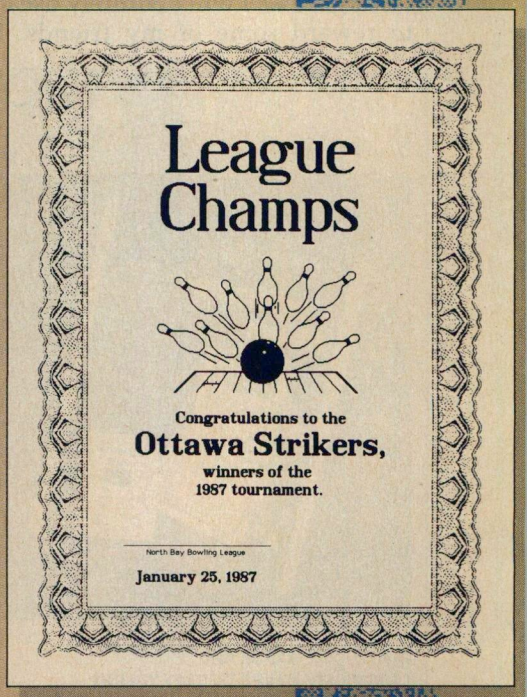
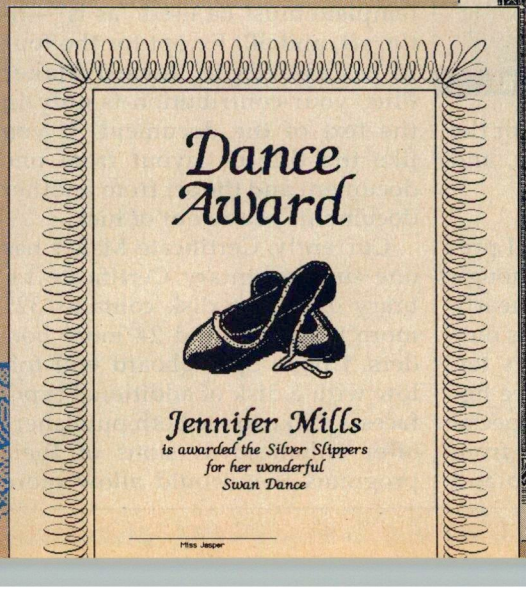
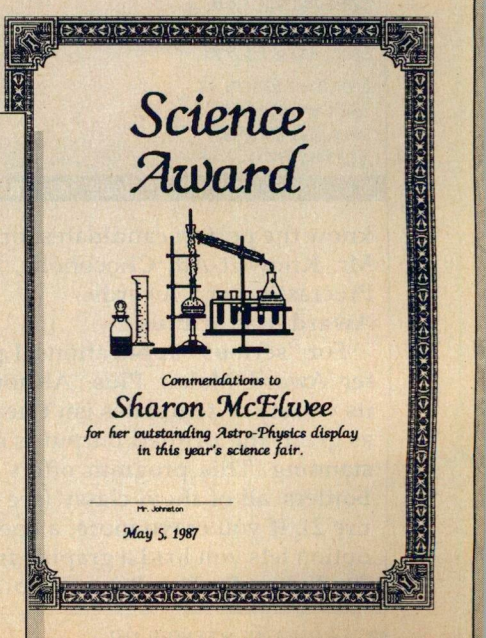


Figure 2: These samples from Award Maker Plus show some of the ten classy borders that are available with the program.

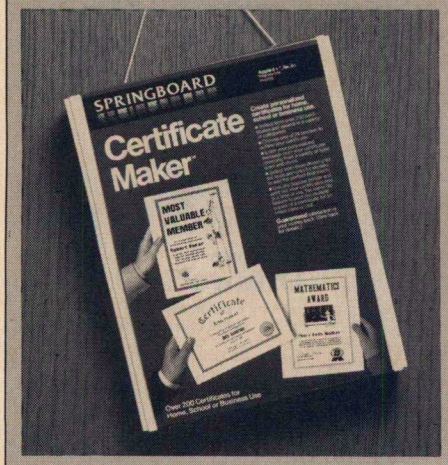




tificate Maker's gothic font, a popular typeface for diplomas and other formal documents, lacks elegance. The illustrations are excellent, but most of them are humorous. None of the fine variety of borders achieves the classic look of certificates you might order from a stationery supplier.

I wouldn't use Certificate Maker to print diplomas for a high-school graduating class, but I would use it to recognize a student's accomplishments or a colleague's hangup (see figure 1). I will definitely use it to reward some of my friends. I know the perfect candidates for the Mr. Know-It-All, Chocoholic, and Procrastinator's Awards.

V I T A L
S T A T I S T I C S



CERTIFICATE MAKER AND CERTIFICATE MAKER LIBRARY VOLUME
A software program and art disk for creating fast and fun certificates

CPU: *Apple II Plus, IIe, IIc, or IIGs*
RAM: *64K*
DISK DRIVES: *one 5¼-inch*
OTHER: *dot-matrix printer*
OPERATING SYSTEM: *ProDOS 8*
COPY-PROTECTION: *yes*
LIST PRICE: *Certificate Maker, $49.95; Certificate Maker Library Volume 1, $29.95*

Springboard Software, Inc.
7808 Creekridge Circle
Minneapolis, MN 55435
(612) 944-3912

CIRCLE READER SERVICE NO. **365**

Award Maker Plus

For "serious" applications, I prefer Award Maker Plus. Although its variety of templates isn't nearly as great, the printed output is outstanding. This program offers ten borders, all of them classy (see figure 2). If you crave more, a special option lets you load a graphic from Brøderbund's The Print Shop and automatically converts it into a border. The typefaces, especially the Old English, are professional-looking. I wouldn't hesitate to use this program to print diplomas.

The ease with which you can create a variety of documents will make either program a welcome addition to your software library.

As an artist, I particularly appreciate this program's hi-res-picture awards. When you select one of the designated four templates, you can import your own standard-hi-res graphic into the certificate.

Another plus in Award Maker Plus is color. If you have access to a color printer, you can print your certificates with colored borders, selecting any 1 of 16 colors.

To make your certificates really special, Baudville now manufactures pin-feed paper with matching envelopes. The paper is available in Natural Parchment, Aged Parchment, and flat-laid Bahia Blue.

Summing Up

Almost everyone can find a use for a program that prints certificates. The ease with which you can create a variety of documents, to honor so many accomplishments, will make either (or both) of these programs a welcome addition to your software library. Be aware, however, that ease of use does have its drawbacks.

These programs allow little creativity and offer few choices. Each template must be used "as is"—title, art, and all. Except for the four hi-res awards in Award Maker Plus, your contribution is only in the text of the document. If you like the title or layout from one document and the art from another document, you're out of luck.

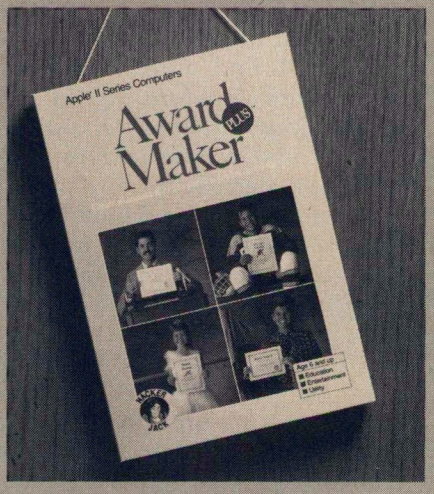
Currently, Certificate Maker has one supplementary Certificate Library disk. The disk contains 325 more templates and 24 more borders. I hope Springboard will follow with a disk of additional typefaces. I'd like to see both publishers offer enhanced versions of their programs that would allow more control over documents. I'd like to be able to select illustrations from a library of clip art, and I'd like an art editor that would allow me to personalize the illustrations they offer. Finally, I'd like the option to include my own artwork in any of the documents. Adding digitized photos, a company or school's logo, and other personalized artwork would allow for more customized certificates.

Go For It

Think about all the people in your life who are waiting for some recognition. With a minimum amount of time and effort, you can bring a smile to so many faces. Springboard and Baudville have given us yet another application for our Apple II computers. And a fine application it is. Perhaps I'll send each of them a certificate of thanks. ✚

Roberta Schwartz is a New York-based A+ contributing editor and is the co-author of our monthly "Speaking of Graphics" column.

V I T A L
S T A T I S T I C S



AWARD MAKER PLUS AND FRENCH PARCHMENT PAPER
A classy program that creates professional-looking awards and documents

CPU: *Apple II Plus, IIe, IIc, or IIGs*
RAM: *64K*
DISK DRIVES: *one 5¼-inch*
OTHER: *dot-matrix printer*
OPERATING SYSTEM: *ProDOS 8*
COPY-PROTECTION: *yes*
LIST PRICE: *Award Maker Plus, $39.95; paper—100 sheets, $12.95; 250 sheets, $24.95; 500 sheets, $44.95*

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In personal computer performance, power makes the difference. When you increase your computer power, you improve your performance. It's that simple.

WordPerfect 1.1 for the Apple IIe/IIc and the new Apple IIGS* works on that perfectly simple premise. And works beautifully. WordPerfect 1.1 is the word processor designed to get the most out of your Apple IIe/IIc or IIGS. The most power. The most efficiency. The most functions. And the most for your money.

Power to the Core.

WordPerfect 1.1 will give your Apple the power to process your words, thoughts and ideas like never before. With scores of useful and unique functions, WordPerfect will do almost any word processing task you can imagine.

For instance, with WordPerfect 1.1 you can do footnotes, with automatic numbering and placement at the bottom of the page. And you can create macros, do a mail merge, set headers and footers, and check your spelling with WordPerfect's 50,000-word dictionary (115,000 words on Apple IIGS).

Plus text entry and display on WordPerfect 1.1 is twice as fast as on the previous version. And WordPerfect now supports true proportional printing for both HMI and microspacing printers.

WordPerfect 1.1 features include:

- 50,000-word spelling dictionary (115,000 on Apple IIGS)
- Align on any character
- Automatic formatting on screen
- Automatic page numbering
- Block features (bold, delete, move, save, underline, etc.)
- Bold and underline text
- Center text
- Chaining of macros
- Comprehensive file management
- Date set/format/insertion
- Extensive printer/font definition
- Flush right
- Footnotes
- Headers and footers
- Hyphenation, automatic prompting
- Indent left and left/right
- Macros
- Mail merge
- Overstrike
- Right justification
- Search and replace
- Super/subscripts
- Text file create/edit/invoke
- Widow/orphan protection
- Word look-up and count
- And more.

Easy as Pie.

For all its capabilities and functions, WordPerfect 1.1 is remarkably easy to learn and use. By utilizing designated function keys and a template, WordPerfect doesn't require you to memorize strings of keystrokes. Features like bold, underline and center are easy to locate and just a couple of simple keystrokes away.

In addition, WordPerfect's newly revised step-by-step manual contains thorough learning examples for beginners and a complete reference section for experienced users. And on-line help screens are provided for easy assistance with individual functions.

An install program is also included to let you take advantage of expanded memory and other ProDOS-compatible hardware.

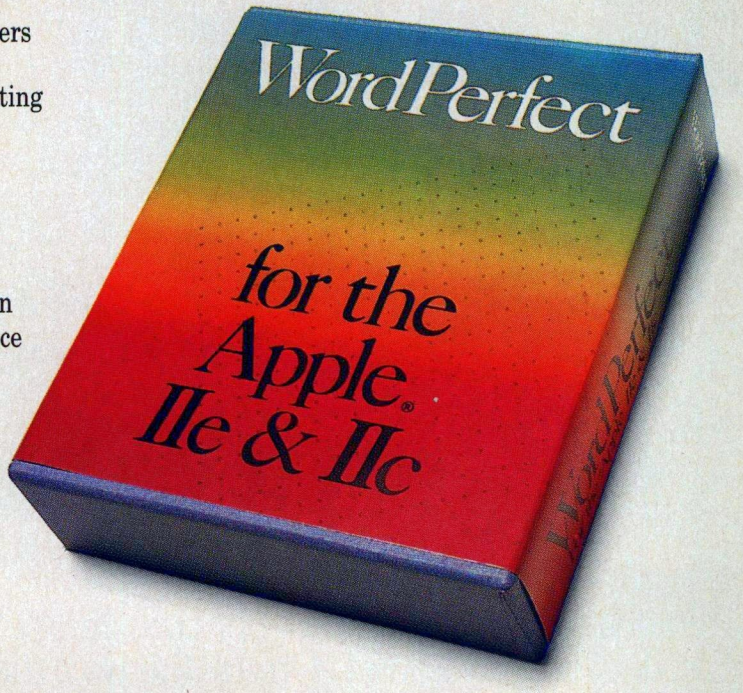
Harvest the Power.

Give your Apple a power boost today. Get WordPerfect 1.1 for the Apple IIe/IIc and IIGS. It's the perfect way to squeeze the most out of your Apple.

For more information, call or write WordPerfect Corporation, 288 West Center St., Orem, Utah 84057 (801) 227-4000.

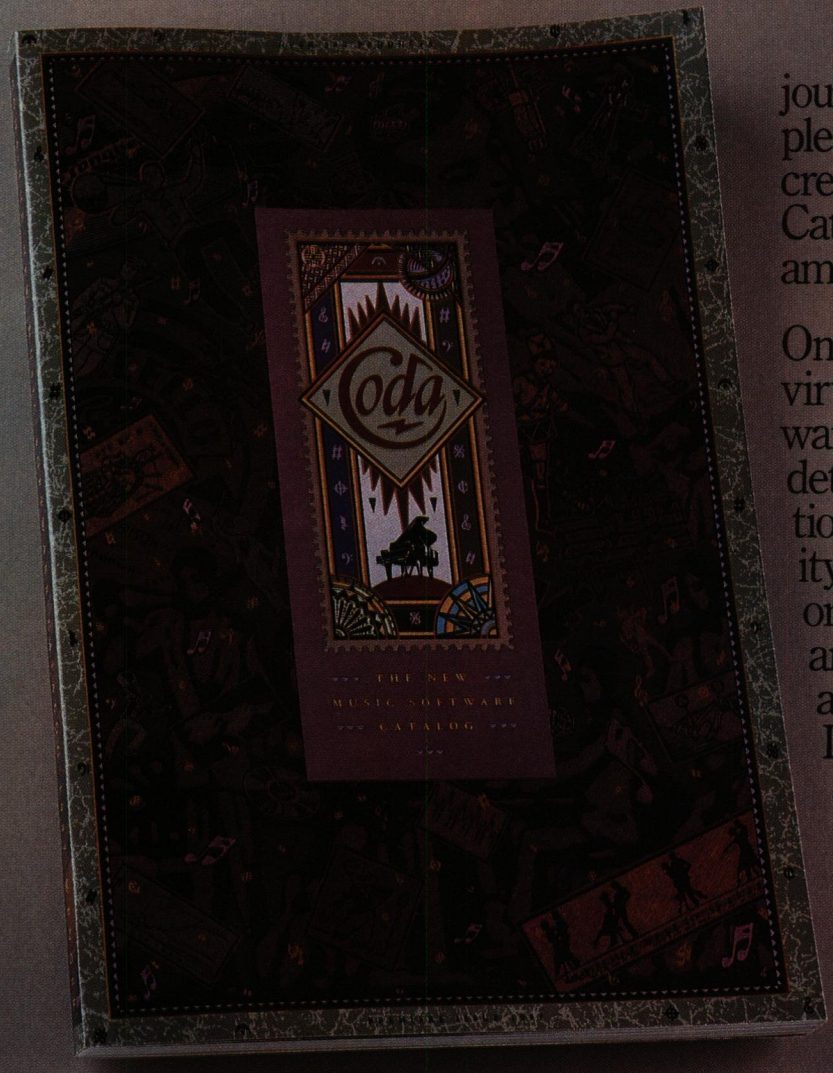
*Runs under ProDOS-16.

WordPerfect CORPORATION



CIRCLE 120 ON READER SERVICE CARD

How To Find Singing Frogs, Bathtub Reverb, Secrets Of Analog And Other Information Beethoven Would Have Killed For.



You're about to embark on a journey through the most complete music software catalog ever created. It's called the Coda Catalog. 160 pages of intrigue, amusement, and information.

On over 600 products, including virtually every piece of music software that exists today. Coda is detailed with whimsical illustrations. And written with a simplicity you'll appreciate. Use it to order software, books, videos, and equipment. All at the guaranteed lowest price. For Apple, IBM, Macintosh, Amiga, Atari, and Commodore computers.

Quite simply, Coda is the best source of music software in the world. Or as one critic so eloquently put it, "Beethoven would have killed for this information." Only $4. Order by calling toll free 1-800-843-1337. Or collect 612-854-9554. Oh, by the way, the singing frog is on page 114.

Coda™

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CIRCLE 286 ON READER SERVICE CARD

IIGS
UPDATE

BY RUSEL DEMARIA

A basic list processor for the IIGS that meets the needs of home and casual users

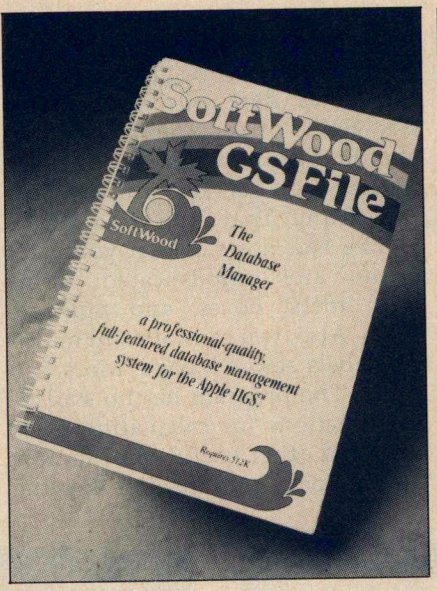
GS File

SoftWood GS File is billed as "a professional-quality, full-featured database management system." The question is, does it live up to its billing? Is it of professional quality? Is it full-featured?

GS File is a nonrelational database program, which means it can work with one file at a time and does not share data from different files. The product has a Macintosh look, using graphic screens, pull-down menus (with some Command-key equivalents), and scroll bars for displaying information that does not fit in the active window. System messages and options use dialog boxes, and quitting after modifying a file produces a Save/Don't Save/Cancel dialog box, preventing loss of data.

GS File accepts data in eight field types (text, numeric, date, time, yes/no, phone, alpha, and alphanumeric). Various field formats are available for numeric and date fields but not for other field types (see figures 1 and 2). Calculated fields (on numeric fields only) use standard math operators (+,-,*,/) and standard mathematical order. Unfortunately, you are limited to a maximum of two decimal places.

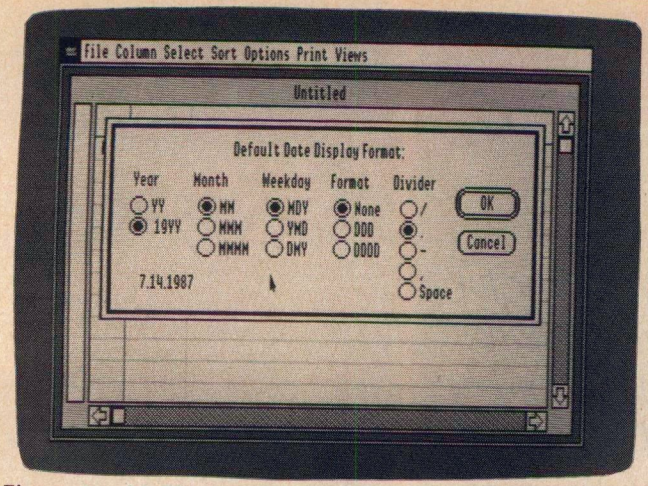
Given the attention the program's creators paid to the formatting of numeric and date fields, the absence of edit masks weakens the product. An edit mask allows you to set a default format for any field. For instance, in a telephone number of the type *(nnn) nnn-nnnn*, an edit mask can automatically insert the parentheses, space, and hyphen. Another type of edit mask might automatically convert lowercase two-letter state abbreviations (ny) to uppercase (NY). Edit masks generally make data input easier, quicker, and more accurate.

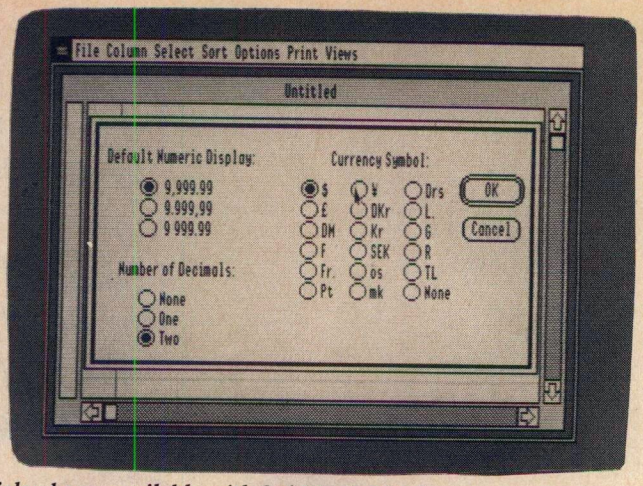


GS File does provide some convenient options such as automatic capitalization of first words in fields, automatic repeating of previous entries when you're entering new data (called the ditto feature), and hidden columns. Standard database features include multilevel sorts and criterion-based record selection (which makes it easy to switch between the full database and selected records only). You can also retrieve data from AppleWorks files and save to and/or load data from ASCII files.

AppleWorks Conversion

Converting AppleWorks files is difficult because GS File does not automatically read the original field types. First you must import the data structure, the fields into which the data will go. Because all fields (regardless of original type) default to text fields, you must now reformat the fields as necessary, meaning that you have to know the original field types before you begin. Finally, you import the data. I had some trouble with this conversion, finding it cumbersome and inconsistent. One serious flaw: I couldn't import dollar-formatted fields as numeric data (which rendered the data useless for further calculations).





Figures 1 and 2: The numeric- (left) and date- (right) field-format dialog boxes available with SoftWood GS File

GS File displays data in two ways—in a list format (rows and columns) or as a form (see figures 3 and 4)—and working with the two formats is easy and convenient. Switching between the list and a form requires only a click of the mouse, and clicking on a particular record in the list automatically displays the same record in its form. You can resize and rearrange list columns as well as fields in forms, but, unlike with AppleWorks, you cannot enter and edit records or highlight multiple records while viewing the list. You must modify and delete records one at a time in the form.

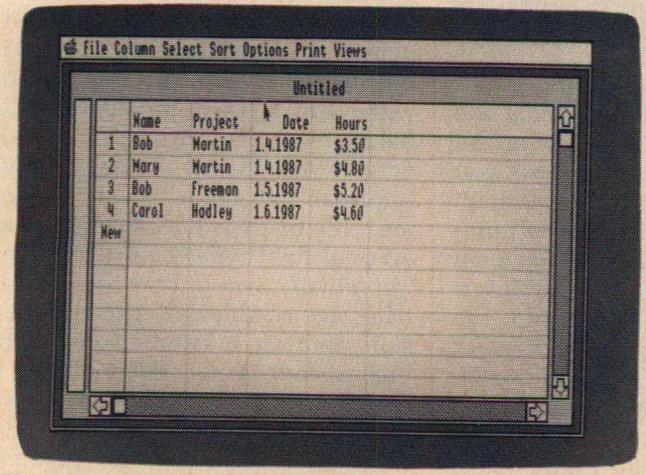
The System Statistics menu command is an excellent feature. It offers full statistics on the current database (number of records, size of file, and the like), available disk space, approximate record capacity of remaining RAM, and whether the current file will fit on the current disk. Another command shows system memory allocated to GS File, and still others allow you to reset the default formats for numeric and date fields.

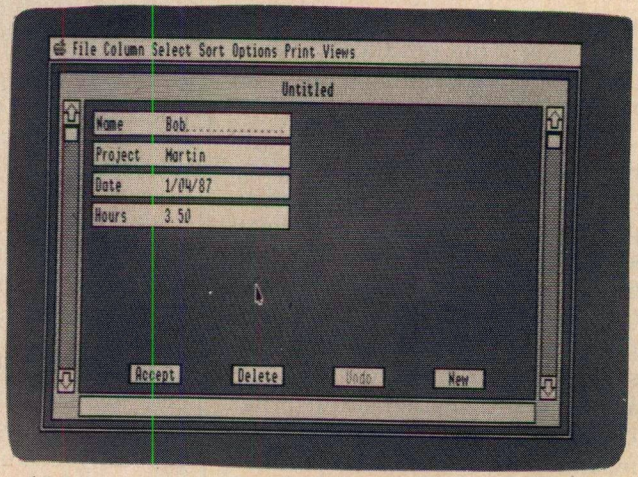
Reporting is a good news/bad news situation. You can print a listed report with titles, automatic totaling of numeric and calculated fields, pagination, and optional next-page printing of overflow (when the data is too wide to fit on a single page). Forms can be printed in mailing-label style or as a full form. When you're printing mailing labels, data only is printed—not field titles—and fields that should be on the same line are placed together for proper label formatting. That's the good news.

The bad news is that you can't create any sophisticated forms with titles, boxes, and multiple fonts. Also, you cannot print multiple labels across a page. More bad news: The program has no statistical functions for calculating averages and other useful information, and it lacks options for creating break conditions in reports. Break conditions separate parts of a report (adding a few lines or starting a new page, for instance) whenever the value of a sorted field changes. They are also useful for displaying subtotals and other statistics when significant changes occur in the report data.

For instance, a report that is sorted by date might contain a break condition to display totals each time the date changed, thus providing instant daily summaries. Break conditions are necessary for professional reporting, and their absence hurts GS File's claim to be a professional database.

A helpful feature allows you to create specialized "views" of your database. Views save current settings such as selections or sorts, column size and arrangement, hidden columns, and form layouts. Views have no effect on the contents of the database. You can add, modify, or delete field data, and then retrieve a previously saved





Figures 3 and 4: GS File displays data in a list format (left) or as a form (right).

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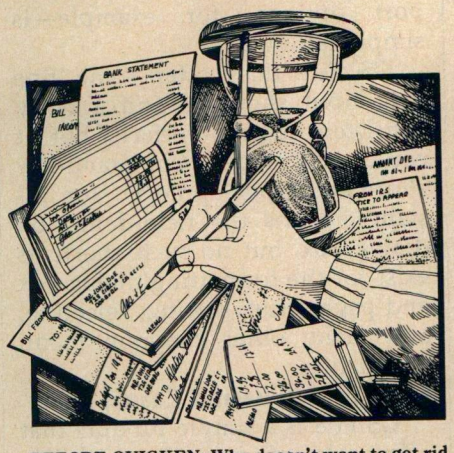
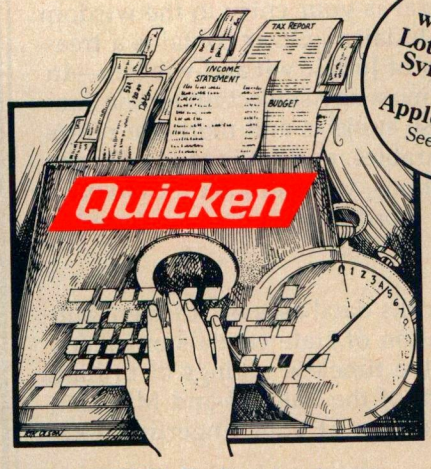


BEFORE QUICKEN: Who doesn't want to get rid of the hassles of paying bills, managing finances, and keeping records?



AFTER QUICKEN: Finally, automate your finances with software so fast and so automatic that time and hassles evaporate.

Also works with Lotus® 1-2-3® Symphony™ and AppleWorks.™ See Below

CRITICS HAIL A BREAKTHROUGH

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  - —RamWorks®
  - —ZRam®
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  - —ProFile®
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- Full support of ProDOS subdirectories
- Multiple accounts on larger capacity disks
- Convenient built-in file management tools (format, create directory, rename, etc.)
- Works with Catalyst® and most other program directors
- Merges data from multiple accounts into AppleWorks spreadsheets

If you write checks, you need Quicken®—the breakthrough software that automates financial management for business and home.

The breakthrough is Quicken's fully automatic design. Quicken is so automatic it remembers your recurring bills and pays them—all you do is sign the checks. Automatic macros cut laborious data entry down to two keystrokes. Quicken manages your checkbooks and even finds and fixes your mistakes. It tracks and totals your expenses by date, payee, and category.

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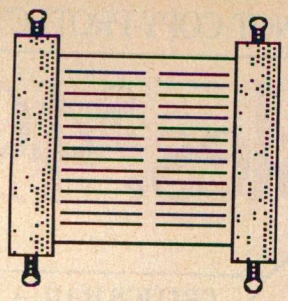

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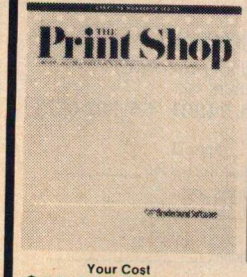

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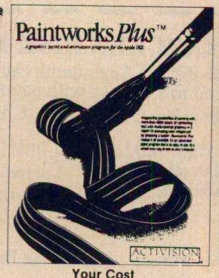

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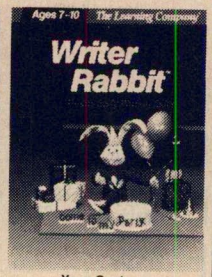

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view while still retaining these changes.

The manual is extremely basic and, though clear, offers only cursory treatment of some important subjects such as calculated fields and reports. Some information—about special dialog boxes for selecting paper width and other report options, for example—is simply left out.

GS File does offer some fine data-input shortcuts and a fairly consistent user interface, but it could use more Command-key shortcuts. Open-apple/D, for instance, opens the field-definition dialog box, but no such shortcuts exist for the formatting dialog box and page setup, sorting, selecting, and many other common menu commands.

Good for Home and Casual Users

GS File is a simple product that offers a lot of interesting and useful features for basic list processing and limited math, but I feel it falls short of its promise to be a professional data manager. As far as its claim of being full-featured is concerned, having many features, even many fine features, does not mean it's "full-featured." Again, I think GS File could use a bit more reporting power, more Command-key shortcuts, and some additional math and statistical functions, at the very least, to live up to its claims.

As a basic list processor, however, GS File is very good and can easily meet the needs of home and casual users. +

Rusel DeMaria is a free-lance writer who lives in Kula, Hawaii.

VITAL STATISTICS

SOFTWOOD GS FILE

SoftWood GS File is a simple nonrelational-database program that is best suited as a basic list processor for home and casual users.

CPU: *Apple IIGS*
RAM: *256K on a memory-expansion card*
DISK DRIVES: *one 3.5-inch*
OPERATING SYSTEM: *ProDOS 16*
COPY-PROTECTION: *no*
MOUSE: *required*
LIST PRICE: *$99.95*

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P.O. Box 90331
Santa Barbara, CA 93190-0331
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CIRCLE 351 ON READER SERVICE CARD

BY KEN LANDIS

A personal accounting program that helps you watch every penny

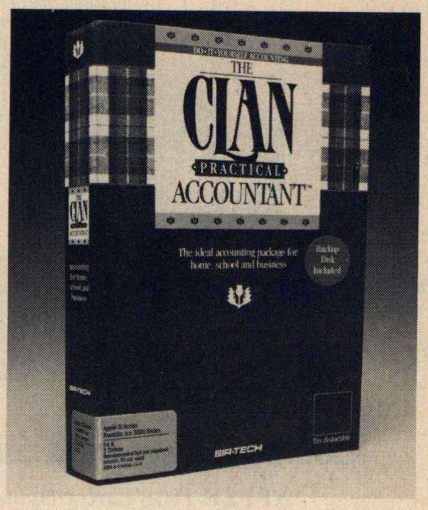
THE CLAN PRACTICAL ACCOUNTANT

The Scotch are renowned for being frugal, and The Clan Practical Accountant (CPA) from Sir-Tech Software is true to this reputation. CPA is a personal accounting package that watches every penny you make. You can also stretch it to work in a small-business environment.

The first instruction sheet you find when you open CPA is a suggestion that you experiment with the program before you read the documentation. That's not where CPA's unconventional style ends, either. The ten different pieces of documentation that come with CPA's two program disks range from a whimsical beginners' guide for nonaccountants to a hefty reference manual that covers all aspects of program operation. The only drawback of the documentation is that it appears to have been designed by a 52-card-pickup champion. Rather than coming in a spiral notebook or ring binder, the documentation consists of stapled manuals and single sheets of paper. Keeping everything together requires a fair bit of concentration.

CPA is a well-designed program. The screen design, key conventions, and flow of the program make it easy to use. CPA is organized into four major segments: Setup, Enter Transactions, Reconcile Bank Statements, and Utilities.

Setup tells CPA what it needs to know to begin using your data and equipment. You not only have to tell CPA what type of printer you have but also how you want your personal chart of accounts to appear (you select from nine predetermined charts that you can customize), what subaccounts are



supposed to be grouped together for totaling, and how many and what kind of automatic transactions you have.

Once you've set up CPA, you virtually live in the Enter Transactions section. As in any other accounting program, the "fuel" that drives the program is the transactions that comprise your financial life. In CPA, you enter all payments, receipts, transfers, and adjustments in this section.

Once a month, you get a bank statement, and once a month you find that it doesn't balance. CPA gives you a hand by showing all the transactions that have flowed through your account, listing them on the screen or printer and, when you find an error, allowing you to correct it quickly.

You use utilities to move data from one disk to another to make backups, carry forward open transaction records at the end of a year or when a data disk fills up, and format new data disks.

You won't buy CPA because it lets you enter transactions or back up data disks, though. The heart of every accounting program is the reports it generates, and CPA is no exception. CPA's four major reports are: monthly, departmental, transaction, and chart of accounts.

The monthly report summarizes all activity that passes through CPA. The report is formatted much like an accountant's multicolumn spreadsheet. The department report aggregates the monthly report into departments. This feature is useful when you use CPA for a small business—but only if your business has a relatively low transaction volume and a simple account structure. The transactions report is a dump of all the activity that passes through each account. It is helpful for tracking down indi-

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As simple to use as CPA is, it is still an accounting program that requires discipline from you.

vidual transactions to gain a better understanding of your finances in detail or to check back on a past transaction. The chart-of-accounts report is just that, a listing of all accounts in the system. Other reports CPA can generate are a current liquid-asset balance report, check register, and bank statement.

As simple to use as CPA is, it is still an accounting program that requires discipline from you. Running an accounting system is not difficult, but it is time-consuming. It takes more effort to automate your personal finances than it does to do it manually. The payoff is not in time but in the knowledge and control you gain. Statistically speaking, CPA can accommodate up to 20 bank accounts, 2400 transactions, 8 departments, and 128 accounts per disk. Other features include selectable reporting and a password mechanism.

One thing the Clan Practical Accountant lacks is the ability to let you manage a payroll, cut checks, or define your own reports. Nor can you pass information into a spreadsheet or tax program for planning and analysis. But overall, CPA brings credit to its lineage. ✚

Ken Landis has been working with and writing about Apples since 1979. His first Apple is a prized family heirloom.

VITAL STATISTICS

THE CLAN PRACTICAL ACCOUNTANT
A well-designed personal-accounting package that's good for small businesses too

CPU: *Apple II Plus, IIe, IIc, or IIGS*
RAM: *64K*
DISK DRIVES: *two 5¼-inch*
OPERATING SYSTEM: *Pascal*
COPY-PROTECTION: *Yes*
LIST PRICE: *$79.95*

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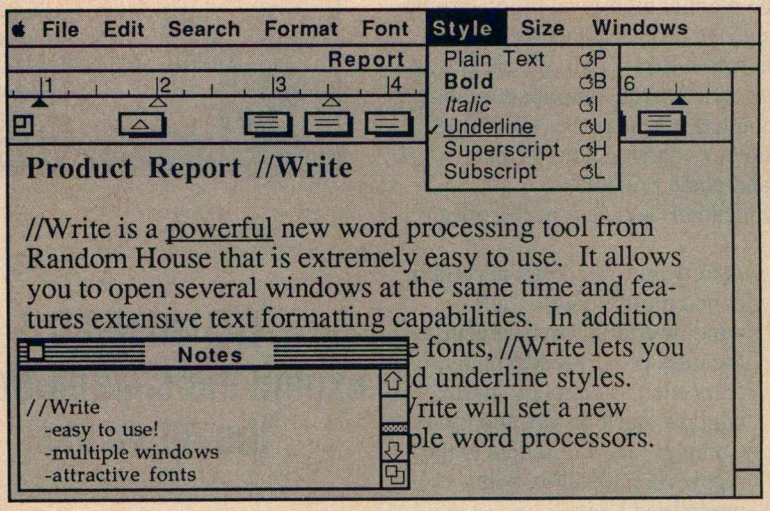

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TML Pascal

The premier high-level programming language designed specifically for the Apple IIGS. TML Pascal is a native code Pascal compiler providing complete access to the Apple IIGS Toolbox enabling you to create stand-alone ProDOS 16 applications and desk accessories.

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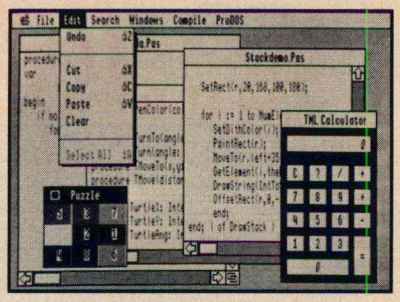

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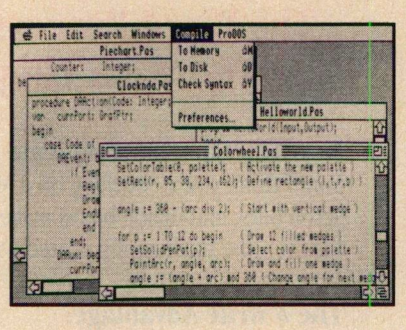

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FEATURE REPORT
VISUALIZER IIe AND GRAPHMERGE

TIP FOLDER
SUGGESTIONS FOR OUR READERS

HELP FILE

Two programs that let you create business graphics for AppleWorks reports

FEATURE REPORT BY CHARLES RUBIN

VISUALIZER IIe AND GRAPHMERGE

Many integrated programs outside the Apple II world include business graphics with spreadsheet capabilities. Being able to display and print a chart or graph of spreadsheet numbers is a handy business function—you can add impact to a presentation or report with a few graphs to make your point. AppleWorks doesn't offer built-in graphing capabilities, but you can use third-party programs to produce professional-looking business graphs.

In this article, we'll look at Visualizer IIe from PBI Software and Pinpoint's GraphMerge, two programs that let you create business graphics and include them in AppleWorks reports. (Pinpoint also has a new product in this category called The Graphic Edge that wasn't ready in time for this report. Watch for an evaluation of it in an upcoming issue.)

Visualizer IIe

Visualizer IIe is an upgrade of the company's older GraphWorks program and overcomes some of its limitations. (GraphWorks was the first business-graphics program that worked directly with AppleWorks files.) The program, which is easy to learn and use, lets you create line, bar, stacked-bar, and pie charts either from AppleWorks spreadsheet data or from data you enter manually.

Visualizer IIe has an interface much like AppleWorks', using menus and open-apple-key commands. To create a graph from an AppleWorks spreadsheet, you load the Visualizer IIe program and add an AppleWorks spreadsheet file to the program's desktop. Whereas the older GraphWorks program couldn't handle spreadsheet files larger than 30K, Visualizer IIe uses a virtual memory system that loads only the part of a spreadsheet file you need at the time, so it can work with spreadsheet files of any size.

When you've loaded the spreadsheet file, the program displays a screen much like the AppleWorks spreadsheet display. You specify up to six data ranges (labeled A through F) and indicate the values in each range by highlighting a continuous group of cells in either a row or a column. Everything the Visualizer program displays, including the spreadsheet screen, is in the double-high-resolution mode. Your Apple has to redraw

the entire screen whenever you make changes, so scrolling around a spreadsheet in Visualizer is noticeably slower than scrolling within the same file in AppleWorks. Incidentally, you can't alter or calculate the spreadsheet data in Visualizer.

If you are making a line chart, you can select up to 6 separate data ranges for each graph, and each data range can contain up to 52 data points. Bar charts can contain 6 data categories, with up to 12 data points in each. Pie charts can contain up to 12 numbers.

Once you've selected data from the spreadsheet file, you press G to draw the graph. The spreadsheet display disappears, and the program draws the graph on the screen. If you want to enhance the graph, you can select from a menu of options that lets you pull out slices of pie charts, change the type of bar chart, adjust the scaling of a bar chart, and the like. You can also move back to the spreadsheet display to indicate labels in certain cells that you want to use as labels for your data.

You can work with only one spreadsheet file at a time with Visualizer IIe, and only one chart or graph at a time. You can save a graph as a picture file to disk, which allows you to edit it with other graphics programs or merge it with GraphMerge.

For finishing touches, Visualizer IIe lets you add titles to a graph or chart by simply positioning the cursor and typing on the screen that displays the graph. The program offers four different text fonts, and you can choose either normal or italic type. If you want to print out a graph, you'll be happy to know that Visualizer IIe works with more than 50 printers and 60 printer-interface cards, and you can print graphs in color on an ImageWriter II. Graphs can print as they appear or rotated 90° (so they print sideways) to improve the quality of the printout.

Visualizer IIe is a simple, straightforward business-graphics program whose features are comparable to the integrated graphic functions in multifunction programs in the IBM PC or Macintosh worlds. It doesn't offer freehand drawing, the ability to plot multiple graphs on one screen, or other advanced features of stand-alone graphics programs for the IBM PC, but it produces professional-looking graphs with a minimum of hassle. At this writing, it is still the only business-graphics program that works directly with AppleWorks spreadsheet data.

If you want more graphing flexibility, Sensible Software's Graphics Department offers much more power, including freehand drawing, the ability to combine graphs,

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and a slide-show feature that lets you display a series of graphs on the screen according to a timed sequence. Graphics Department is a DOS 3.3 program, however, so you have to convert your AppleWorks data to the DOS 3.3 format as a DIF file before you can work with it.

GraphMerge

It's fine to print a graph on a page by itself if you want to make a slide for an overhead projector or append a graph to a report, but if you're using the Pinpoint Desktop Accessories program with AppleWorks, you can use GraphMerge to insert Visualizer IIe graphs directly into AppleWorks word-processing documents.

To use GraphMerge, you display the Pinpoint menu and choose the GraphMerge option. GraphMerge must create a temporary work file before it loads, and the whole process takes about 45 seconds if you're using a floppy disk as the storage device. You can greatly improve the performance of GraphMerge (and other Pinpoint accessories, not to mention AppleWorks itself) by using extra memory and running AppleWorks and the Pinpoint accessories from RAM and then using a RAMdisk as the place to store GraphMerge's temporary work file.

Once you've loaded GraphMerge, you open an AppleWorks word-processing file by choosing it from a menu. You can scroll vertically through the file to review it and find the place where you want to merge a graph. You are working in GraphMerge at this point, however, not in AppleWorks, so you can't edit the word-processing file at all.

The next step is to open a graphic file from disk. GraphMerge can use Visualizer IIe, Dazzle Draw, and MousePaint files directly. The Pinpoint manual also has instructions for converting graphic files from other programs for use with GraphMerge.

Once you've opened the graphic file, the graphic appears on the screen. You use arrow keys or a mouse to position and stretch a selection rectangle until it surrounds the portion of the graphic you want to merge. Again, you can't alter the graphic on this screen—you can only view and select it. After you confirm your selection, though, GraphMerge displays a dialog box that has options for transferring the graphic at its full size, or at half height and/or half width. You can also transfer the graphic so that it prints with black and white reversed.

With these options out of the way, you choose the Merge Picture command, and the word-process-

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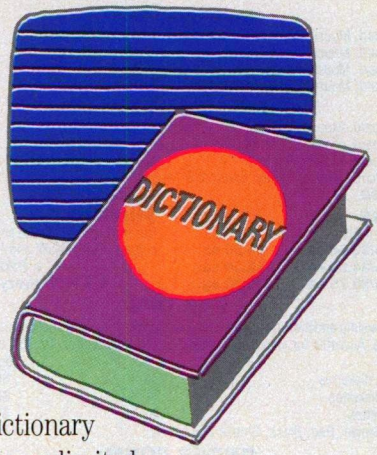

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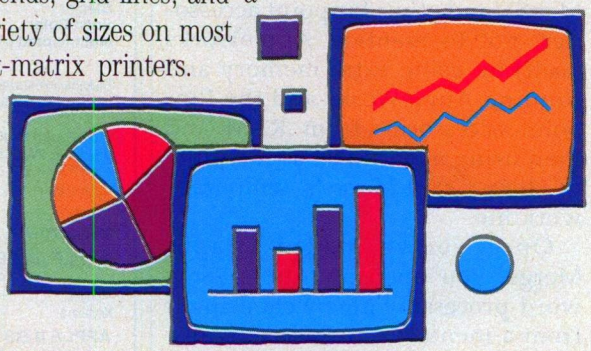

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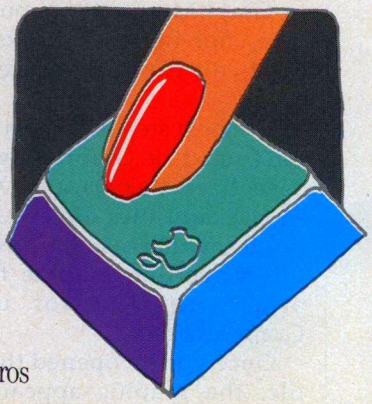

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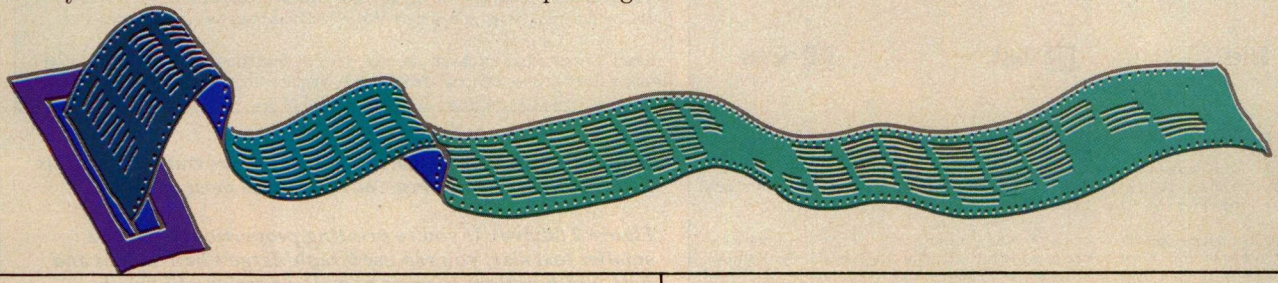

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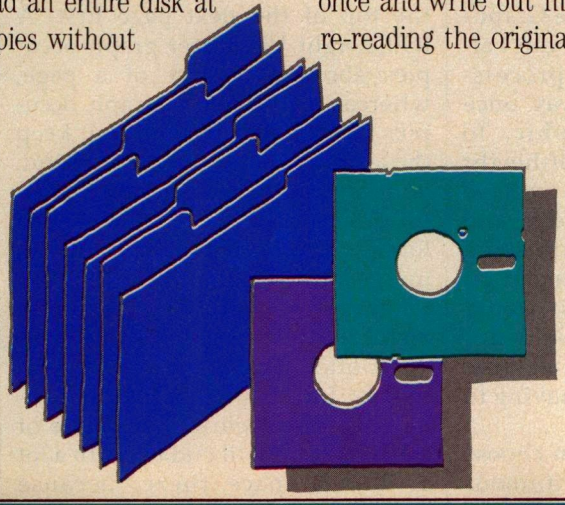

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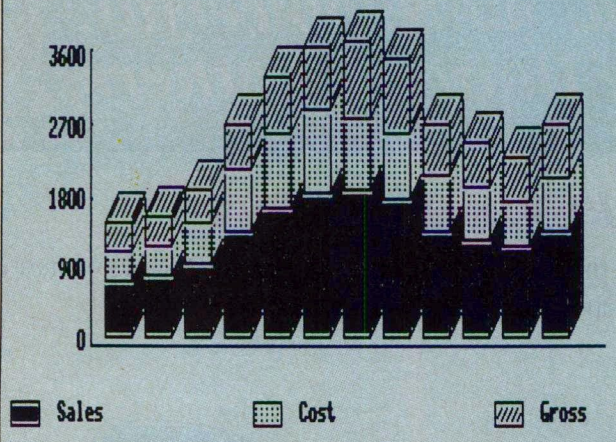
1987 Sales Report

Our sales at Acme Toy Distributing during 1987 were cyclical, with our largest selling season occurring during the summer months, due to our large inventory of seasonal toy items. Figure 1 shows how overall sales have climbed during the period January through September, and then tapered off through October, followed by a modest surge for the Christmas season.



Seasonal items, such as beach balls, picked up in the March-June quarter, as expected, but even the traditional teddy bears, dolls, science kits, and toy cars held strong after the end of the 1986 Christmas selling season.

Clearly, Acme must increase its inventory of traditional gift items and exert more effort at the National Toy Show acquire hot-selling Christmas items.

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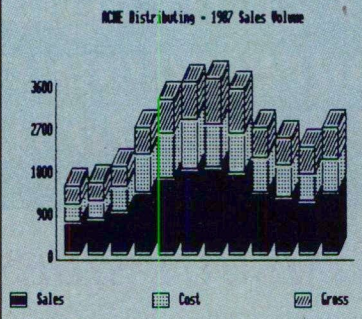

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Figure 1 (left): This Visualizer IIe graph was transferred at its full size with GraphMerge, so it occupies most of a page.

Figure 2 (above): If you're printing proportional text or a smaller text size, you can use GraphMerge's half-height and half-width options to print a smaller version of a graph.

ing file appears again. You position a cursor to indicate the merge location and press the Return key, and the graphic appears in the word-processor file.

GraphMerge places the beginning of the graphic at the cursor's location, and (unlike the cursor in AppleWorks) the cursor can't move freely outside of a text area. So you should make sure to insert a couple of carriage returns between the paragraphs where you want the graphic to appear or at the end of the document (if you're merging the graphic at the end). Doing so allows enough room to move the GraphMerge cursor a couple of lines below the end of the paragraph above, so the merged graphic isn't jammed against the bottom line of the text when you perform the merge. You must remember to insert these additional carriage returns while you're working in the word-processing module, because you can't edit the word-processing file once you've loaded GraphMerge.

After you've merged the graphic into the word-processing file, you can either view it or print it. Unfortunately, you can't save the GraphMerge file to disk, and you can't alter the combined word-processing/graphic file in any way once you've merged the graphic. To change the graphic (to half-height or inverse, for example), you have to quit GraphMerge, reload it, and then select the word-processing file and graphic all over again—a time-consuming process. It would be much easier if you could unmerge or delete a merged graphic and merge again without having to quit GraphMerge first.

When you print, you can choose either single-sheet or continuous paper, and you can print in draft or quality mode. You can also print more than one copy in one operation by choosing another option.

GraphMerge won't begin printing a merged graphic if there isn't enough room on the current page—it will advance the paper to the top of the next page first. A half-height Visualizer graph occupies about a quarter of a page, whereas a full-height graph occupies about half a page. If you keep these space requirements in mind, you can plan to merge graphs in locations that won't end up leaving a lot of white space on a page. If you merge a full-height graph between paragraphs above the middle of a page, the text that follows it will print after it, and the entire page will be full. If you merge the full-height graph below the middle of the page, you will end up with a lot of blank space there, because GraphMerge will go to the top of

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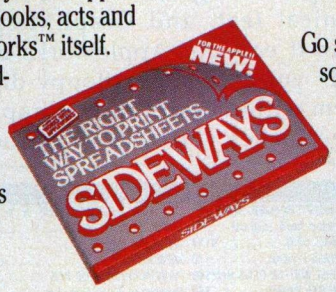

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the next page before it prints the graph.

You can't see page breaks in GraphMerge's display of the word-processing file, but you can count the number of lines of text and approximate the amount of space you have on each page. With the default margins and pitch settings, you can print 54 lines of text on a word-processing page. Knowing that, you can plan to merge a full-height graph on a page with no more than 27 lines or spaces above it. If you're merging a half-height graph, you'll want to merge it on a page with no more than 40 lines or spaces above it.

Getting the best look for a combined text and graphic document will probably require some trial and error. If you're using standard print with 10-pitch characters and you want the graph to be a major feature on a page, for example, you may want to use a full-size business graph, as shown in figure 1. If you're using proportionally spaced print, on the other hand, a half-size graph will look better, as illustrated in figure 2.

As a team, Visualizer IIe and GraphMerge can move your AppleWorks reports and presentations into the big time.

In either case, the graph you merge aligns with the left margin of the text.

Merging a graphic file with a word-processing file is a difficult technical feat, and GraphMerge makes it easy for AppleWorks users. If you're using a floppy-disk system without extra RAM, GraphMerge makes you wait at various times as it works its magic. It's inconvenient to start over from the beginning if you want to modify the size of a graph or the word-processing text with which you're merging, but GraphMerge dresses up a business report as no other Apple II program can.

As a team, Visualizer IIe and GraphMerge can move your reports and presentations into the big time. ✚

Contributing Editor Charles Rubin is the author of AppleWorks *and* Command Performance: AppleWorks, *both from Microsoft Press. He writes about computing for various publications.*

VITAL STATISTICS

VISUALIZER IIe

This graphics program produces business graphics from AppleWorks spreadsheet data or from data entered by hand.

CPU: *Apple IIe, IIc, or IIGS*
RAM: *128K RAM*
DISK DRIVES: *one 5¼-inch*
OPERATING SYSTEM: *ProDOS*
COPY-PROTECTION: *No*
LIST PRICE: *$79.95*

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VITAL STATISTICS

GRAPHMERGE

A Pinpoint Desktop Accessory, this program lets you merge graphic files into AppleWorks word-processing documents.

CPU: *Apple IIe, IIc, or IIGs*
RAM: *128K*
DISK DRIVES: *one 5¼-inch (two strongly recommended)*
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CIRCLE 126 ON READER SERVICE CARD

TIP FOLDER

BY STEVE HIGH

CONFIGURING PRINTERS

Getting your printer to work with AppleWorks is a one-time job, but it does have to be done right at least once if you want everything to work, which you do. Even if you select an Apple printer or one of the Epson MX, RX, or FX series as your printer, demand that your dealer show the printer working with AppleWorks before you take it home. This is trebly important if you select a printer that requires a "custom" printer setup.

If you have already bought your printer and it's not one of the ones I've mentioned, you already know that you're on your own now. If you have an Apple-compatible parallel-interface card, however, you can probably install your custom printer without wrestling with any printer codes. Some of your printer's features, such as underlining, boldface, superscript, and subscript, won't work, but you can use the quick-and-dirty AppleWorks underlining option, Print character, backspace, underline instead of the start/stop underline codes, because this option works with all printers. This technique will make your printer usable until you get some help or figure out for yourself the correct stop/start underline codes for your printer.

With the possible exception of pathnames and nested @IF statements in spreadsheets, few experiences are nastier for first-time AppleWorks users than dealing with custom printers and nonstandard parallel-interface cards. When you are ready to get your printer running right, remember that your parallel printer-interface card is as important to the process as your printer's power cord, and that, unlike your printer's power cord, it has a mind of its own. It may require entry of special codes under the Interface Cards option on the Printer Configuration menu. Read your parallel-interface-card manual carefully to determine the correct code to install in AppleWorks and call the manufacturer if necessary. If you have a serial rather than a parallel interface, don't change anything, because any problem you have is probably with the printer.

The only general advice that I can offer about entering printer- and interface-configuration codes is to type them in very carefully. Once you do know what codes you need, you have to type them in *exactly* that way. ESCAPE E does not mean ESCAPE e, for example, or ESCAPE space E. By the way, when you want to "escape" the printer codes, don't type ESCAPE. Type the little caret above the number 6 by holding down the Shift key and typing *6*.

The process of installing a custom printer is not really so terrible, but it comes at an awkward time in the learning cycle.

TIME-SAVING DATABASE COMMANDS

Use the Standard Values (open apple/V) and open-apple/ditto commands to save time in the database module. These commands complement one another by letting you enter repetitive information quickly into database records. If you are entering data into several records in which one or more categories will have the same information (such as the state of California in an address list), you can use the Standard Values command to insert California automatically into the State category of every new record. If your addresses turn out to live in Rhode Island at some point and you have several records with that state entry, you can use open-apple/ditto (quotation mark, or apostrophe) to "ditto" Rhode Island in several records in a row. All you have to do is change the state entry in the top record in the group to Rhode Island and put the cursor beneath it (in the State category in the record directly below) in the multiple-record layout. Open-apple/ditto copies the data from the category above and then moves the cursor down to the same category in the next record below. ✚

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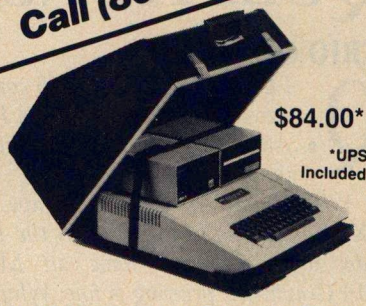

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HELP FILE
BY STEVE HIGH

QUESTIONS FROM OUR READERS

TRIO OF QUERIES

Q. *I have a Citizen MSP-15 configured to look like an Epson FX. After two years, I still have three problems:*

1. When I tell AppleWorks I have an FX-80, it prints little os down the left side; when I say I have an MX-80+Graphtrax, printing is fine. Why?

2. Databases and spreadsheets can print in the condensed mode. Is there any way to force word-processing documents to do so also?

3. I want to move an IBM PC database file to AppleWorks, but my communications program works under DOS 3.3. Can I do this?

Paul Fowler
Redwood City, CA

A. In order, your answers are:

1. I suspect that Citizen did not make a 100% Epson-compatible clone. Since the MX-80+Graphtrax selection works for most things, however, and since you may want to use a Custom Printer selection to resolve question 2, I recommend you forget about the FX-80 driver. Set up a Custom Printer configuration with the Add a Printer selection on the Specify Information About Your Printer(s) menu, and enter the specifications for your Citizen printer from your printer's manual.

If you find you're still getting little os printing down the left side of the page, the problem is with your printer interface. Check the manual for your printer interface and look for the command that turns off the screen echo. It will be something like Control-I 80N. Then, choose the Interface Cards option from the Custom Printer Configuration menu and enter the correct code on the screen that follows.

2. To print word-processing text in the condensed mode, install the printer codes you use in the database and spreadsheet modules (the ones that tell your printer to print in the condensed mode) under two printer-control options you don't normally use, such as Begin Superscript and End Superscript. Then, when you want condensed print, use the superscript commands.

An alternative is to try printing your word-processing file immediately after printing condensed print in the spreadsheet or database module without turning your printer's power off. The printer will have been set to print condensed for the previous file and it may continue

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printing in the condensed mode when you run the word-processing file through it.

If you don't know how to print condensed type in the database and spreadsheet modules, grab your printer manual, find the code to change to condensed print, type open-apple/O and SC, and then enter the code to begin condensed print.

The SC printer option lets you send a special formatting code to your printer, such as the one for condensed print. There's room for only one code under the SC option, however, so you'll have to print your entire spreadsheet or database file in the condensed mode once you've turned that mode on with the SC command.

3. The best solution is to buy a ProDOS communications package. Some DOS 3.3 software vendors, such as Hayes, provide a ProDOS upgrade for little or nothing. Absent that, the much maligned DOS to ProDOS Conversion Utility (on the ProDOS User's Disk) can convert DOS text files to ProDOS text files. The real challenge, however, may be in getting your PC to print the text files in a format that the AppleWorks database module can use once the file is converted to ProDOS.

When it makes a new file from a text file, the AppleWorks database module treats everything between carriage returns as one category of information. Therefore, when you use a text file to create an AppleWorks database file, AppleWorks asks you how many categories of information the new file will contain. If your original MS-DOS file contained five fields and had a text file with individual field entries on individual lines terminating in a carriage return, you would tell the AppleWorks database module to create five categories. Every five lines of data would then become a record, with each line's data going into a category.

In your case, the only thing to do is determine how many categories of data your original file had and then specify that same number of categories for the new database file in AppleWorks. If the data doesn't get sorted into the proper categories and records when you load the text file, then your MS-DOS program can't save its data as a text file with fields on individual lines separated by carriage returns. (dBASE III, for example, typically saves text files with fields separated by commas, rather than carriage returns.) If you can't get the MS-DOS file into the proper format, you are probably out of luck. +

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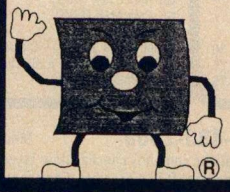

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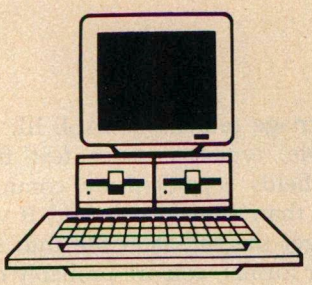

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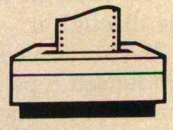

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BY KEN LANDIS

Five programs—and more—that help you make the most of your dot-matrix printer

PRINT-QUICK

Although you've probably left no stone unturned in squeezing the last bit of processing power out of your Apple, odds are you've done little to take advantage of the power built right into your printer.

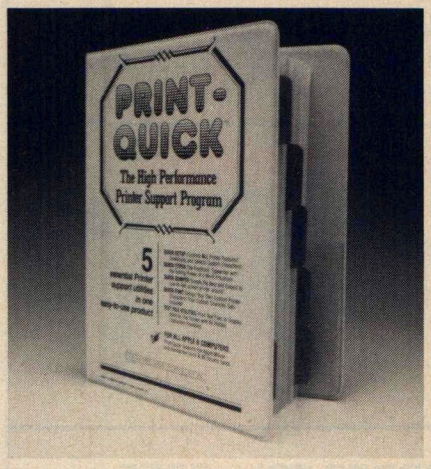
Unless you have a programming background, the patience of a saint, and stock in a paper company, mastering your printer has been an uninviting task—until now, that is. Print-Quick from Third Wave Technology, Inc., makes it easy to use every possible feature of your printer.

Print-Quick isn't one program; it's a group of five programs for any Apple II-series computer running under DOS 3.3 or ProDOS. You also get 15 custom fonts, ranging from Broadway-style to stencil-style and a disk-head-cleaning control program that works with any disk-head cleaner.

Print-Quick works with more than 50 printers and 30 interface cards, as well as 80-column cards, clock cards, Apple-compatible drives (both hard-disk drives and RAMdisks), and Mockingboard sound cards. I couldn't find a popular Apple-compatible dot-matrix printer that it wouldn't work with in at least an emulation mode.

Installing Print-Quick is a snap. The Configure program checks to see what kind of Apple you're using, how much memory is installed, whether a mouse is connected to your system, and so on. Once the program has completed its setup, it displays a list of the options that it's found so that you can double-check it.

Once Print-Quick is configured, using it is a pleasure. All of the programs have you use the same keystrokes to navigate, and if you get lost, you can resort to Print-Quick's on-line Help feature, which is only as far away as pressing Control-Q. The five Print-Quick programs are



Quick-Setup, Quick-Typer, Quick-Font, Quick-Dumper, and Text File Utilities.

Quick-Setup eliminates the need for you to master the esoteric escape sequences necessary to activate the special print features in your printer. Using a printer-specific setup screen, you select the options you want from a menu and specify settings such as fonts, width, nationality, lines per inch, and characters per inch. Quick-Setup is even smart enough to tell you when you have chosen two options that conflict with each other.

Once you've completed these settings, you save them in a standard text file. You can execute this file any time—you don't have to run Print-Quick to use it. It instructs your printer to take on the characteristics you specified when you created the text file with Print-Quick. If you want to use your printer right after making a change without executing a command file, no problem. Quick-Setup quickly changes your printer on the fly.

Quick-Typer is a bare-bones word-processing program that lets you bang out quick-and-dirty notes without having to learn how to use a complicated word-processing program. If you have already mastered such a program, though, don't discount Quick-Typer. Creating forms and doing special graphics jobs will probably be easier with it because of its natural coupling with the rest of the Print-Quick utilities.

One printer feature that only Masters of Computer Science have ever used are the user-defined or custom-character capabilities of dot-matrix printers. We have all seen the grid diagrams buried in the users' manuals that show how to create a character by placing dots at certain locations within the grid, but few, if any, of us understand the programming commands for creating and downloading those characters. Quick-Font makes creating and downloading characters as easy as finishing a connect-the-

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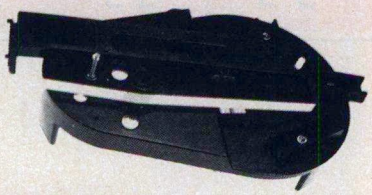

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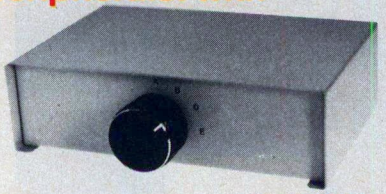

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dots picture.

Third Wave has even anticipated and solved many of the problems—e.g., allowing for proportionally spaced fonts and handling descenders—you might encounter in using various printer and interface-card combinations.

Quick-Font can also use checkerboard, diamond, full solid block, small block, solid circle, apple, and up/down/left/right-arrow symbols for customizing forms.

Quick-Dumper is the fastest and best hi-res screen-printing utility I've seen and can take care of every conceivable contingency. You control size, rotation, density, cropping, cropping speed, and number of print-head passes. Quick-Dumper is remarkably straightforward and simplifies what has historically been an overly complex task.

Rounding off the Print-Quick series is a family of text-file utilities that make displaying or printing text files no more difficult than selecting a menu choice.

Print-Quick's documentation includes a short glossary of important printer terminology and detailed explanations of how to use Print-Quick with various monitors, peripherals, and software.

If you want to maximize the investment you've made in your dot-matrix printer, then Quick-Print is a must. Your only other option is to get a Ph.D. in Printer Science, a degree you probably don't have the time or the inclination to get. ✚

Ken Landis has been writing about personal computers since 1979.

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BY DAVID D. THORNBURG

THE STUDENT AS TEACHER

Learning by preparing lessons for a computer

Recently I visited with Neville Stern from the Royal Melbourne Institute of Technology. We discussed recent advances in computer technology that were going to make expert-system-based educational software a practical reality. One of the things we talked about was learning by teaching, the idea that the best way to learn something is to teach it to someone else. In the context of the courses that Stern teaches, Prolog is the tool with which students can represent knowledge and then test their knowledge by asking questions of the system.

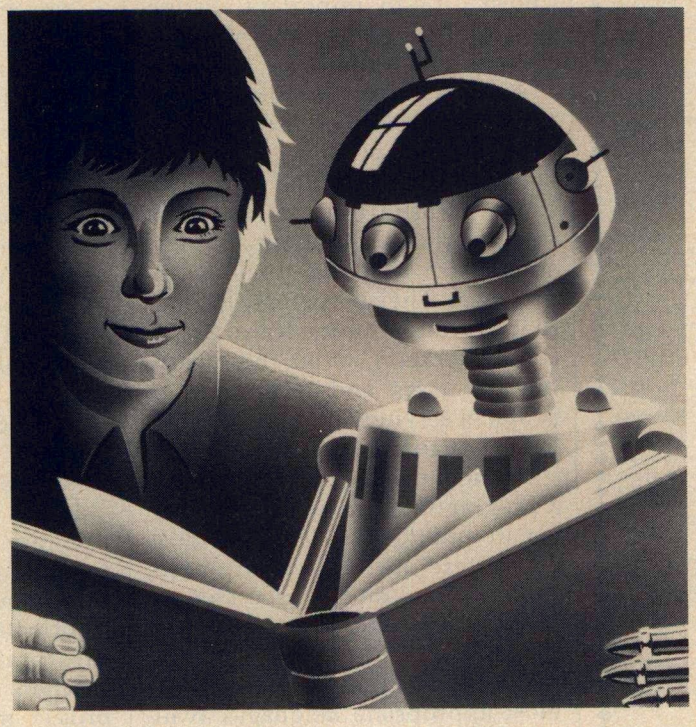
"After all," Stern said, "most examinations are based on recall and simple application of knowledge with almost no requirement for creativity on the part of students. These types of examinations can be answered by a fairly smart robot."

He suggested a model of teaching in which students "teach" the course to a robot, which then takes the final examination. If the robot passes, the student passes.

Why a Robot?

The reason for using a robot or any computer as an intermediary is quite simple. The level of knowledge that students have to demonstrate to teach the material necessary to pass an exam is greater than the knowledge they require to take it themselves. This difference arises from a critical gap between knowledge in computers and in people. An empty computer program is a true blank slate—the system has no knowledge whatsoever—but such is not the case for students.

Common-sense reasoning and a wide base of facts and rules are a common starting point for students at any grade level. The task of conveying knowledge to a machine that lacks such a basis requires the inclusion of all the little details. This attention to detail eliminates the opportunity to gloss over the "hard stuff."



I recall sitting as a student in a quantum-mechanics class, where I understood every fifth word. Each night I pored over my notes, read the textbook, and talked with classmates to fill in the missing steps. The homework sets were overwhelming, and the only way any of us ever learned the material was by getting together and each trying to explain the concepts we understood to those who didn't comprehend them.

Interestingly enough, some of the things we thought we "knew" were concepts that we didn't really understand. This lack of comprehension came into sharp focus the instant we tried to teach this material to others.

Microworlds

The task of teaching a subject to a computer involves the creation of a computational microworld whose domain is the subject of interest. It can be quantum mechanics, long division, foreign affairs, or the classification of butterflies. Any topic that contains facts and rules is suitable for this process.

Many teachers are engaged in this type of educational activity when they have students create databases using commercial database programs on the Apple IIe. The task of creating a database requires the classification and quantification of knowledge, and the decisions involving the attributes against which the database can be searched require a lot of creative thinking.

For example, in creating a database on whales, you might ask, "What are the relevant pieces of information we

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want to record for each type of whale?" A quick brainstorming session with the class might produce a list of terms including size, weight, diet, migratory behavior, life span, population, and color.

The act of creating this list is accompanied by class discussion regarding these various attributes, so the students not only learn information, but they also learn how to organize it.

Once this initial phase of the project is complete, the students have the task of finishing the database. Doing so requires research and frequently results in the generation of new fields to hold information of a new type that students have discovered while answering questions.

When a class works on a project of this magnitude, students learn the value of collaboration and teamwork and become appropriators of their own knowledge. Teachers act more as facilitators of learning rather than as providers of facts. Students "pull" information rather than having teachers "push" it—an important distinction that can affect the students' level of motivation.

Aside from an introductory lecture or workshop on the use of the database tool, students require no special computer skills.

The limitation of database microworlds is that they are more suitable for facts than they are for processes. They perpetuate the idea that education means learning disconnected facts rather than learning processes and techniques of problem solving.

PILOT Wanted

If students have the time to learn a programming language, you can get around this restriction. Because computers are process-oriented, students can model processes by creating computer programs, often in Logo.

PILOT emerges as one of the most appropriate languages available on Apple II computers for this type of task. PILOT is often thought of as an authoring language for teachers, but John Starkweather designed it for the use of children. In fact, the first lessons created with PILOT were written by very young children.

The language has a simple set of primitives for the creation of programs that engage users in a dialog with the machine. I realize that many consider PILOT a dusty old language that has failed to capture the hearts and minds of educators, but it can be a valuable tool for the creation of educational programs by students.

For example, I have seen student-written PILOT programs that explore cloud formations and the names of cloud types; programs that explore symmetry in nature; and even one that engages students in a dialog about their name in order to produce a poem about it.

Like a hidden bottle of rare Cabernet Sauvignon covered with dust, PILOT deserves another look by educators who are interested in having students take responsibility for learning.

The Finished Program

The oddest thing about this application of computers is that the resulting program is almost anticlimactic. From the students' standpoint, the learning took place during the creation of the program, not its execution. The only reason to run the program is to verify that the students did the job properly.

Contrast this approach with a model of educational computing in which students use exclusively programs or databases that others have created. You can easily imagine the opportunities for learning that come through the creation of the program.

What about the Teacher?

Usually, student projects of this sort require a lot of teacher time. One of the common complaints about Logo is that the children seem to be doing a lot without a clear path to knowledge.

In the model above, such is not the case. The only difference to teachers is a change in their function from being a direct provider of information to being a provider of information-acquisition skills. Teachers are also the coaches and project monitors who make sure the projects stay on track.

Large educational projects involving entire classes in rich subject domains such as marine mammals, for example, not only result in increased learning about the subject, but they can also show students how to acquire knowledge on their own—a lifelong skill that is of tremendous value. ✚

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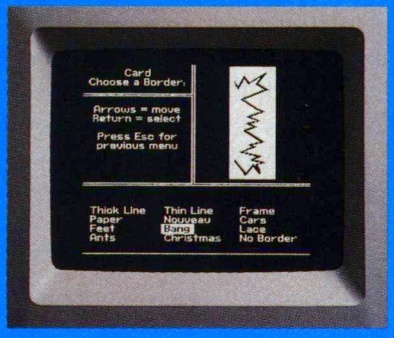

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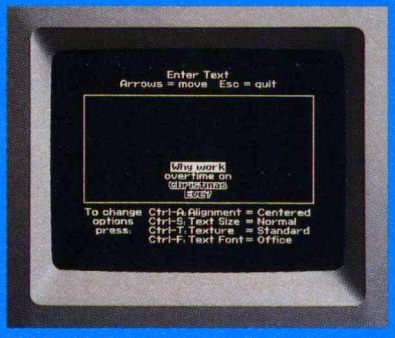
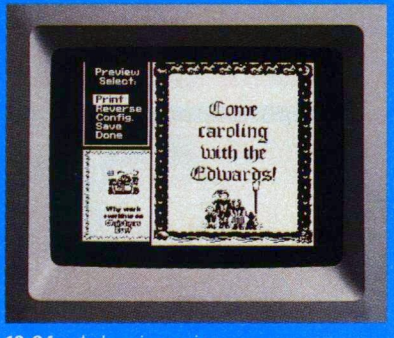
10:01— *Select from more than a hundred high-quality graphics— hundreds more when you add the Art Galleries.*

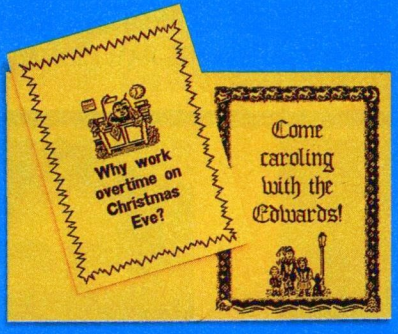
10:02— *Preview and make changes anytime without starting over. What a time saver!*



10:03— *Craft your message from 9 expressive typefaces in upper and lower case.*



10:04— *And preview again.*



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A+ Magazine Proudly Announces the Winners of Our First Annual *"How I Use the II to Teach"* Contest

"HOW I USE THE

VIRGINIA H. CARNEY
Home/Personal Winner
Newport, AR

Grand Prize winner: Home/Personal

Virginia Carney's winning entry concerns her work with a brain-injured child. Here's an excerpt:

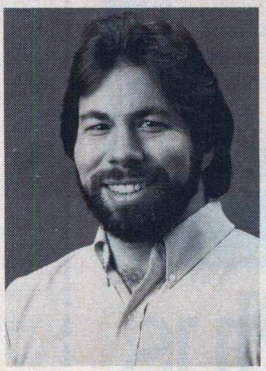
"Elizabeth was fascinated with the computer. She did not have the fine motor skills necessary to press any one key, but with effort she could zero in on the space bar. So that was our starting point. I invented space bar games . . .

"The first one was very simple—a stick-dog moving toward his dog house . . . From there my imagination took off. We had a garden that needed watering so the flowers would grow . . . We even had a Statue of Liberty drawn right on the screen, with "The Star-Spangled Banner" giving a fitting ending . . .

"As Elizabeth's motor development and motivation increased, she needed a challenge—a choice of responses. I came up with markers that would fit over any key. Now she could respond with several keys, as long as they were not next to each other. I wrote other games giving a choice of responses."

Our two Grand Prize Winners will each be awarded an Apple IIGS system provided by Apple Computer, Inc. Each of the winners will also receive an AST Research VisionPlus video digitizer, an Applied Engineering 512K GS-RAM card, MDIdeas SuperSonic stereo card, Telex

THE JUDGES
The winners of the contest were selected by our blue-ribbon panel of judges:



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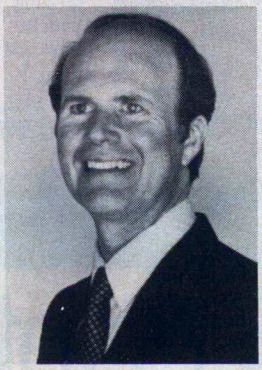


DAVID THORNBURG
Educator, Lecturer, Inventor

II TO TEACH

WINNERS!

Grand Prize Winner:
Classroom

Terence Nickolette's winning entry describes an ambitious science/math project. Here's an excerpt:

"I transformed my computer lab into a fully functioning Mission Control center for NASA's Simulated Shuttle Launch . . . This educational program has students and teachers doing everything involved in a real shuttle mission, from selecting and training astronauts and designing experiments to converting a school bus into a space shuttle, named the Leopard Express . . .

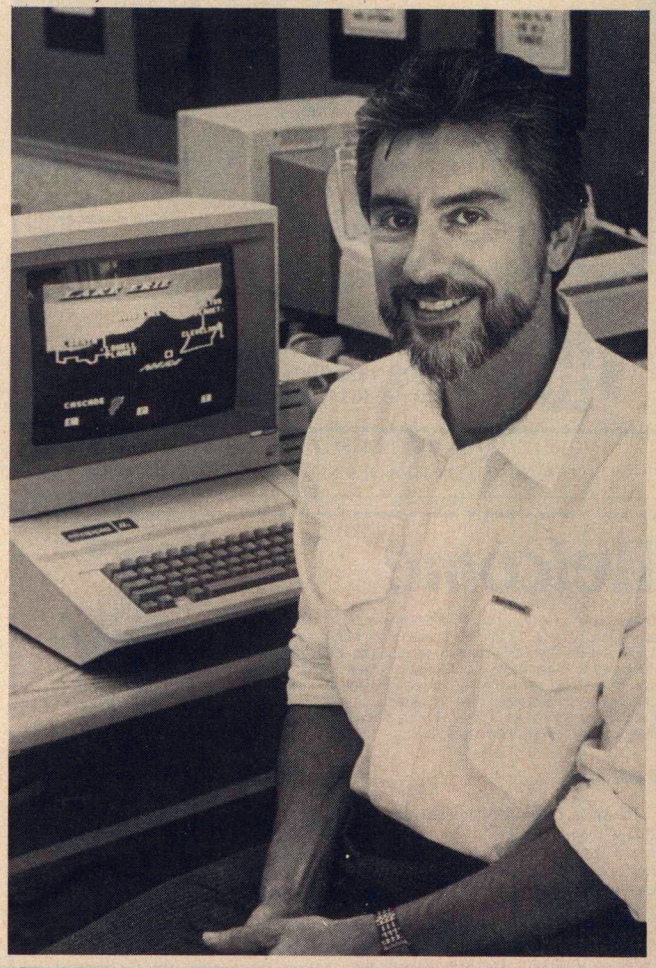
"Five groups of students using the lab computers were assigned the following job descriptions: Radio Operators, Cartographers, Information Officers, Experimental Systems Monitors, and Xenobiologists (whose task it was to establish contact with extraterrestrial life forms—the students of another participating school) . . .

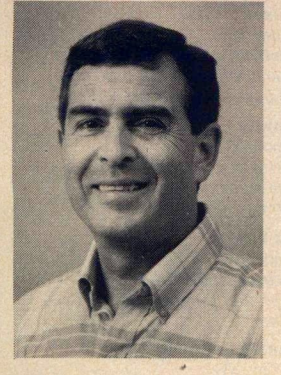
"The launch and the return of the Leopard Express were a tremendous success."

MagnaByte Image Projection system, KroyKolor printer/photocopier enhancer, and a pair of Bose RoomMate speakers.

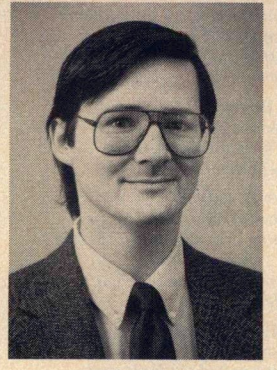
Congratulations to our two creative educators!

TERENCE NICKOLETTE
Classroom Winner
Lorain, OH





LEROY FINKEL
Editor, Computer Using Educators *newsletter*



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CIRCLE 230 ON READER SERVICE CARD FOR APPLE
CIRCLE 233 ON READER SERVICE CARD FOR IBM

Welcome

Open-Apple is Tom Weishaar's monthly newsletter for knowledgeable Apple II users. It's thin but packed tight with Apple II lore, humor, letters, tips, advice, and solutions to *your* problems. Compared to other Apple II publications, ***Open-Apple*** has the highest new-idea-per-issue ratio, the clearest writing, the funniest cartoons, the longest index, the *only* warranty (all your money back if you're not satisfied), and it takes up the least shelf space. The only thing it doesn't have is the most subscribers. Yet.

II cue #21

The Apple II is an international computer. However, an Apple II CPU can have one of two different types of video circuitry—50 Hertz or 60 Hertz. Which you get depends what country your Apple was sold in. When you use a 50 Hertz Apple in a 60 Hertz country, or vice versa, you will see a slight flicker or waviness on the video screen, but otherwise it will work fine. To stop the flicker you'd have to get a new CPU, not a new monitor. For more information see "Power to the Apple II" in our June 1987 issue, page 3.37.

From our fan mail:

My current configuration is a 640K Apple IIe with *Copy II Plus*, AppleWorks 1.3, *ASCII Express Professional*, and Basic.System loaded into the RAMdisk and an issue of ***Open-Apple*** in my hand.

Keith Ford
Madison, Al.

Open-Apple is #1, even for those of us who don't PEEK and POKE—it still adds to our understanding.

D. Caldwell
W Monroe, La.

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"HOW I USE THE FIRST PRIZE

In addition to our Grand Prize Winners, *A+* has also selected 25 First Prize Winners in each category who will receive software from top Apple II publishers. *A+*

CLASSROOM

Norman Coombs
Rochester, NY
Setting up systems by which he can read student papers, conduct on-line conferences, and otherwise work independently—no small feat, since he is blind

Rita Henry
Glen Ridge, NJ
Incorporating an Apple II into many aspects of her earth-science and chemistry curriculum

Anthony J. Chiaramida
Edison, NJ
Creating a variety of computerized courses for medical students

Carolyn Craig
Shelbyville, IN
Creating a comprehensive computer-graphics curriculum in a small rural school

Helen Hamerstrom
Arnold, MD
Teaching French with an interactive video based on video material she taped in France

William Kent Guegold
Mantua, OH
Mapping out marching-band drills to help the band learn formations

Beverly A. Carmean
Philadelphia, PA
Teaching medical instrumentation and measurement to science students

Nancy H. Fortran
Aurora, CO
Teaching color and light theory

George W. Cox
Colton, NY
*Running a project for students in grades 6*12 that involves creating and running a mock corporation*

Bob Hughes
Escondido, CA
Teaching marketing and entrepreneurship

Janet M. Calvert
Bloomfield, NJ
Helping deaf students find "pen pals" with whom to communicate via video and modem

Marilyn Melstein
Huntingdon Valley, PA
Having gifted students write programs to help a mentally retarded child communicate with others.

Ike Presley
Doraville, GA
Teaching visually impaired students many computer skills, including on-line researching, word processing, and computer art

R.G. Romanczyk
Binghamton, NY
Running a comprehensive computer lab for children with psychological disabilities

Michael Blyth
Staten Island, NY
Teaching students to write mystery stories

John L. Meisenheimer
Richmond, KY
Writing programs to teach medicinal chemistry and genetics

Worth Lovett
Clarksville, TN
Simulating the formation of a corporation and manufacturing a product

Bill Deering
Piedmont, OK
Turning a classroom into a World War II "underground command center" and testing programming students on their cryptographic skills

Wesly Marburger
Spokane, WA
Instructing programming students to write games for special-education students

Nancy Landau
Scottsville, NY
Producing an animated video that teaches about prejudice and fears of the unknown

Cecilia Aros Hunter
Kingsville, TX
Setting up a computer lab and curriculum for the children of ranch hands at King Ranch, the world's largest ranch

William J. Fiske
Seekonk, MA
Rewriting manuals and support materials for science students who have poor reading skills

Franklin C. Cacciutto
Freeport, NY
Writing a BASIC program to teach students how to write poetry

Chet Day
Metairie, LA
Teaching students how to design and program interactive fiction

Kenneth C. Holvig
New City, NY
Administering the publishing center for a national electronic magazine

II TO TEACH WINNERS

MORE WINNERS!

congratulates all our winners for their creative and fascinating entries, and we thank all the hundreds of other contestants for their efforts as well.

HOME/PERSONAL

Susan Griffis
Indianapolis, IN
Using a IIe with a video camera and VCR to make "videostories" for her daughter

Marty Lasse
Ketchikan, AK
Teaching writing one-on-one to Ketchikan Indians

Linda West
Amarillo, TX
Teaching her son a variety of skills and subjects—from Logo to Spanish to Bible stories

Jeff Golub
Seattle, WA
Engaging in an on-line editing/tutoring session with a student

Wes Mun
Waipahu, HI
Helping his mother recover from a stroke by using computer games

Andrew Fleming
Oroville, WA
Using the IIGS to teach visual-perception skills to his daughter

Lawrence M. Traub
Dallas, TX
Writing programming tutorials for his younger brother that reward him with games

Jay Silverman
Baltimore, MD
Teaching speech skills to his daughter, who has Down's Syndrome

William Reed
Chula Vista, CA
Teaching an adult neighbor how to read

David E. Thalheimer
Acton, MA
Teaching reading to a German girl with dyslexia

Joseph G. Pastorek II
Kenner, LA
Introducing his father to the joys of following the stock market on-line

Jean L. Keezer
Holdrege, NE
Using games and productivity software to educate her disabled son

Jane E. Gallant
Anchorage, AK
Using Print Shop as a reinforcement tool in tutoring children individually

Beth Turner
Bronx, NY
Helping her son put together a newsletter

David A. Sams
Cincinnati, OH
Writing a flash-card program to help his son improve his reading skills

Jane Ellen Weltz
New York, NY
Using commercial software to "get through to" a learning-disabled child

Victoria J. West
Austin, TX
Teaching her sister CAD—Computer Aided Dieting

Mark Ethington
La Palma, CA
Writing programs to tutor his brother in algebra and trigonometry

John Drowatzky
Toledo, OH
Using both off-the-shelf software and programs he wrote himself to tutor his daughter in math

Vincent J. Tartaglione
Pitman, NJ
Teaching his son mathematics with a baseball game

Thomas Schnick
Oakfield, WI
Keeping his son on track at school by helping him at home with personalized writing projects and other tutoring

Cheryl Melaragno
Ashtabula, OH
Showing her father how to create greeting cards and fostering his interest in the computer

Marshall Sorgen
Brooklyn, NY
Writing language-skills and math programs for his learning-disabled daughter

Veronica Mulvey
Chula Vista, CA
Using commercial software to develop her son's small-muscle control and coordination, as well as improve his motivation

Brenda Conroy
Peoria, IL
Using a IIe in music lessons

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BY JENNIFER BRAWER

A+ TEACHERS' TOOLBOX

Talking up the Talking Notebook Series from First Byte, a set of IIGS programs for grades K-12

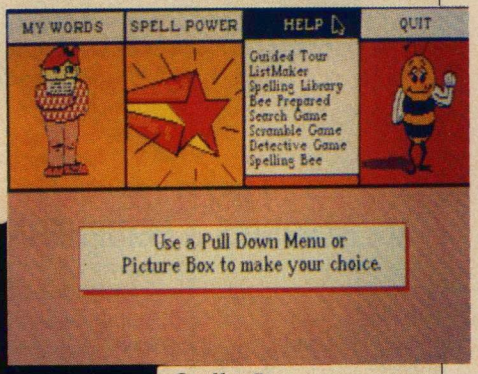
The most undisputed virtue of computers in education is their tireless tutoring potential. We're all familiar with the image of a student engaged in a self-paced, informational exchange with a text- and graphics-based software program. With the exception of the beeps, tunes, and bonks accompanying text messages about performance, the exchange is silent. This image is going to change, though, as software begins to exploit the enhanced sound capabilities of the Apple IIGS.

Imagine an educational software program that verbally explains how to use the program; reinforces this information with simultaneous on-screen text; provides individualized, verbal performance feedback; is graphically rich; and has a great personality. All of these attributes apply to the Talking Notebook Series from First Byte; this software features a variety of clever tutors who provide unique learning experiences because, quite simply, they "talk."

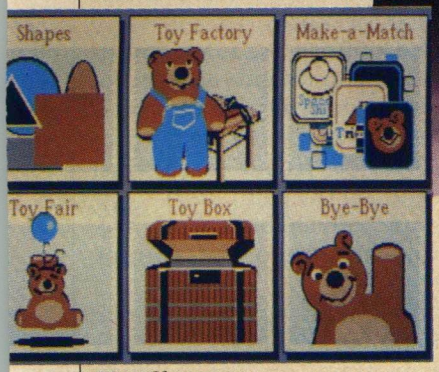
Talking Tutors

First Byte, a leader in software speech technology, develops software that takes advantage of the special chip (the Ensoniq digital oscillator chip) built into the Apple IIGS that allows the computer to simulate sounds ranging from Beethoven's Fifth to human speech. The First Byte programs produce synthesized speech, which some people think takes second place when you compare it to the more human-sounding digitized speech.

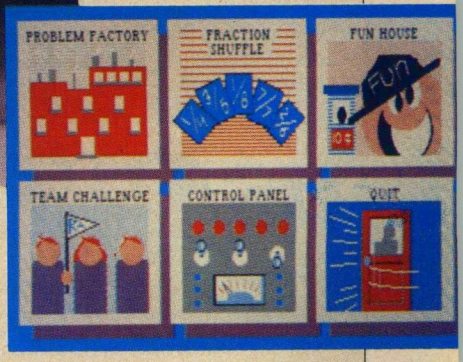
MathTalk



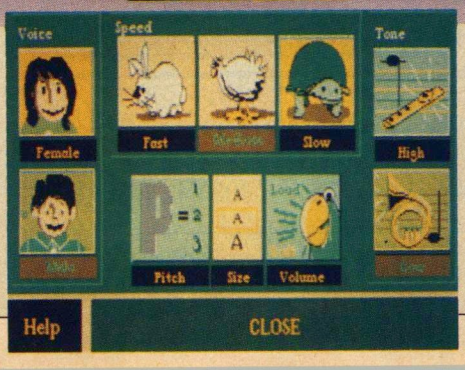
Speller Bee



First Shapes



MathTalk Fractions



KidTalk

The primary complaint is that synthesized dialog is monotonous and devoid of the inflection cues so important to human communication.

Not in the First Byte programs. The words don't sound human, but the computer speaks them slowly and clearly, with appropriate inflection. For example, in MathTalk Fractions, Professor Matt A. Matics sounds like any television game-show host when he kicks off "Teeeeam" Challenge, a game that allows students to pick a team of fictional contestants who compete for points by solving fraction and decimal problems.

The First Byte products demonstrate the many possibilities in store for educational computing.

One advantage of synthesized speech is that there is no limit to the amount of speech that can be produced. Synthesized speech is spontaneously produced each time the computer reads the program and gives the software its power to "speak" an unlimited variety of problems or words, corrective feedback, and custom text. A digitized vocabulary, in contrast, is limited to words and sounds contained on a disk; you cannot add to or alter it. Since First Byte uses speech synthesis, it can allow the computer to say what you want it to say.

Overall, the First Byte products are outstanding. They utilize all the unique features of the Apple IIGS and demonstrate the many possibilities in store for educational computing at home and in the classroom. The addition of speech to the computer tutoring process creates an irresistible invitation to learn. First Byte does not, however, rely only on fancy technology to carry its products. All the programs in the Talking Notebook Series are high in educational value and so open-ended and flexible that they promise to hold children's interest and attention. As impressive as these products are, they are not perfect, however. Some words are difficult to synthesize and hard to understand. For example, *oval* sounds more like *uvil*. Parts of the programs take a long time to load and do not run quickly. For math-whiz kids racing against the clock, the delays might be frustrating.

The programs included in the Talking Notebook Series have some common features that are worth noting:

- An Apple IIGS, a mouse, and one 3.5-inch disk drive are required.
- The programs require lots of memory—768K or more!
- Program options are often multidimensional and let you control the level of difficulty, subject matter, and playing status (e.g., play alone, with a friend, or against "someone" in the computer).
- They offer adjustable speech volume and the option of turning speech off.
- They come with clear documentation that offers a general overview of the program, problem-solution aids, and suggested problems or activities to supplement concepts practiced on the computer.

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The tutor in First Shapes is Ted E. Bear, who introduces preschool through primary-grade children to basic geometric shapes. Using circles, squares, rectangles, triangles, and ovals, children learn size relationships, build toys that they can save to their own special toy box, and work on shape-recognition and matching skills. The program increases understanding of shape and form concepts that are fundamental to the development of mathematics, reading, and problem-solving skills. A unique feature of the program is the option of designing up to six custom reward messages that the computer speaks and presents as on-screen text. Designing the messages is easy, and you can improve the synthesizer's pronunciation by changing spelling and inserting spaces.

Favorite Quote from Ted E. Bear: "Hooray, and away I go!"

MathTalk

Professor Matt A. Matics referees games that provide practice in addition, subtraction, multiplication, and division. Problem sets can be created, saved, printed, and called up for practice and test simulation. If a student makes a mistake, the professor backtracks through the problem to help find the error. The Talking Calculator can also help figure out the correct answer. The most challenging part of MathTalk is in the Game Room. The professor issues the ultimate challenge, "GO FOR IT!" to all those who choose to try to beat the clock and solve one hundred randomly generated problems.

Favorite Quote from the Professor: "You're right. You make a Professor proud."

MathTalk Fractions

MathTalk Fractions teaches fractions, decimals, and percents. Once again, Professor Matt A. Matics is the helpful tutor who leads students through the many parts of this program. You can create problems in the Problem Factory. When students solve the problems, they get points for correct answers, and the Professor gives clues to help

All the programs in the Talking Notebook Series are high in educational value.

correct wrong responses. Gambling types get to flirt with chance and wager hard-earned points in Fraction Shuffle. To get through the Fun House and enjoy all the special effects, you must complete three randomly presented games. Problem types include equivalent fractions and decimals, the creation of fractions that approximate what you see, and "heads or tails" probability estimation.

In Team Challenge, two teams compete for the most points. The challenger chooses the team of opponents from an opponents database. The opponents are represented by a picture, name, and a short

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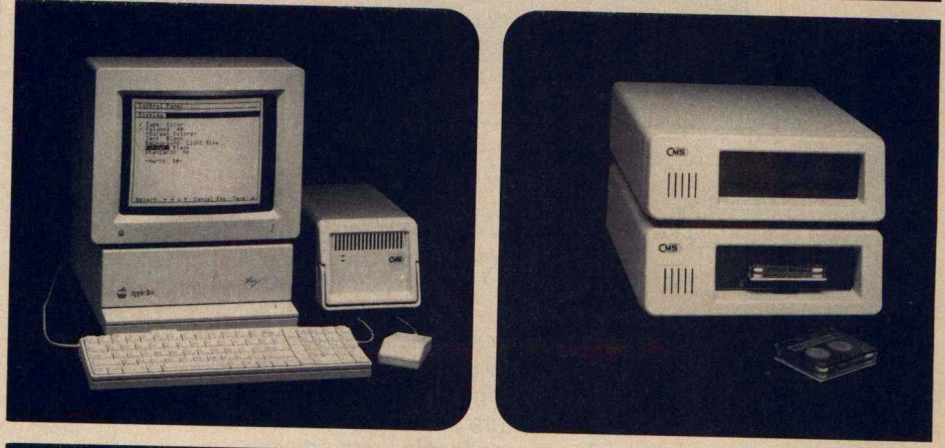

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CIRCLE 122 ON READER SERVICE CARD

biography pertaining to their mathematics ability. Believe it or not, you can pick an opposing team that makes mistakes. Beware of Ace A. Point—he plans to become a mathematician.

Favorite Quote from the Professor: "Sorry, your score is zero. The game is over."

Speller Bee

This program's tutor, Speller Bee, can teach spelling to anyone at any age. You can create or save up to 32 lists containing 10 words of 15 letters or fewer. In all program options, you can choose to use your own word lists or one of the pre-entered lists of commonly misspelled words. Program options allow practice of any word list as well as scored spelling games and a computerized version of an old-fashioned spelling bee.

If a printer is attached to the computer, you can print a spelling list, complete with a portrait of Speller Bee (color printing can be specified). The program's developers subscribe to the popular educational theory that learning occurs when children encounter a concept through multiple senses. Under the guidance of Speller Bee, children experience each word visually, aurally, and mentally.

Favorite Quote from Speller Bee: "I'm impressed!"

KidTalk

KidTalk is a talking word-processing program. No real tutor personality runs the show—except the writer. Budding authors, playwrights, and poets can hear and print their written work. The program has cut, copy, and paste features that allow students to do serious editing.

The KidTalk Speak menu gives the writer the option to hear text letter by letter, word by word, or sentence by sentence. If the text doesn't sound right, you can alter the pitch, speed, volume, and tone. Two voices—male and female—are available. Either one can "read" an entire file, or you can use them interchangeably to create dialog. In Dictionary Tricks, you can change mispronounced words and create a special dictionary of secret code words. Code words will surprise anyone expecting to hear what they see.

Favorite Quote from KidTalk: "Whatever you write!" ✚

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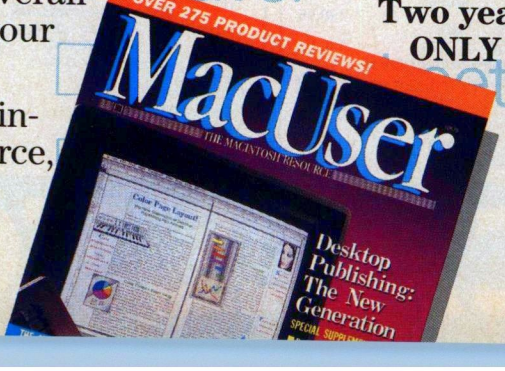

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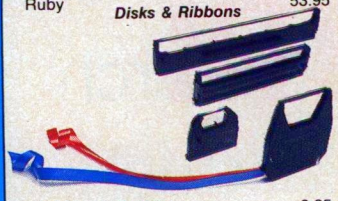

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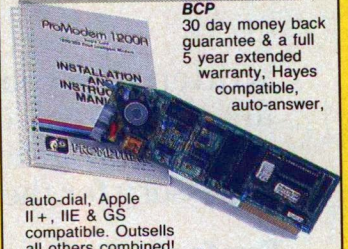

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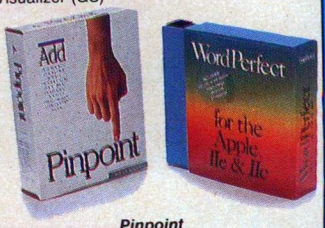

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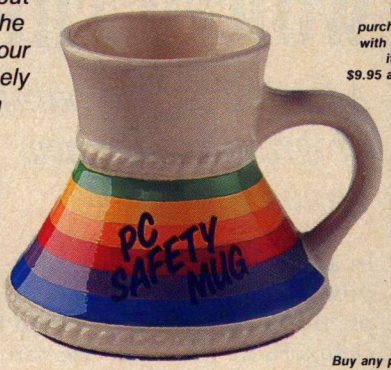

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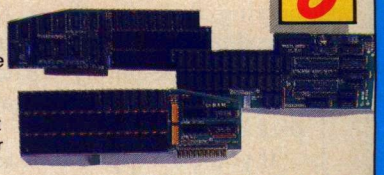

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BY ROBERTA SCHWARTZ AND MICHAEL CALLERY

DELUXEPAINT II—A PROGRAM WORTH THE WAIT

A feature-packed paint program breaks new ground.

In a minireview in September, we proclaimed that if you had an Apple IIGS computer, you should buy DeluxePaint II. What else can we say about what is simply the best paint program for the Apple II computer? Actually, we have lots more to say, but Electronic Arts has packed its DeluxePaint II program so full of features that we'd have to fill several columns to discuss all of them in depth. We'll just dip a bit further beneath the surface in this issue—enough, we hope, to whet your appetite.

When you start up DeluxePaint II, the screen resembles many other MacPaint-like programs such as MousePaint and Paintworks Plus. A menu bar stretches across the top of the screen, and a toolbox extends down the right side. Most of the tools are like those in the other paint programs: brushes, lines, circles, and rectangles. You also see a selection rectangle, a palette of 16 colors, and functions for handling text, clearing the screen, and magnifying, among others. Most anyone should be able to start painting almost immediately without cracking open the documentation. Just pick a tool and go.

If you do happen to read the documentation, however, you'll discover DeluxePaint II's divergence from other paint programs.

Brushes

Whereas other programs let you capture an area and use it as a brush (if you hold down a key while moving the selection), the cut-and-paste and brush functions in DeluxePaint II are a powerful and seamless single function. The "brush selector" creates a brush from anything you put on the screen. Thus, instead of picking up a color from the palette, you can pick up any image from your picture, which becomes your brush. When you paint with it, that image duplicates itself repeatedly along the line you describe.

Menu options control the way each brush works. If the background color is transparent, the brush is like the selections the lasso tool produces in other programs (only the foreground drawing moves—the background stays put). If the background is matte, or opaque, the brush is like the selections the marquee tool produces in other programs (the foreground and background pixels move together). You can change your options on the fly from the pull-down menu or by using keyboard shortcuts without reselecting the brush—a method that approximates the "modeless operation" recommended in Apple's own *Human Interface Guidelines*. We wonder why Bill Atkinson (the creator of MacPaint) did not use this approach.

DeluxePaint II is so full of features that we'd have to fill several columns to discuss all of them in depth.

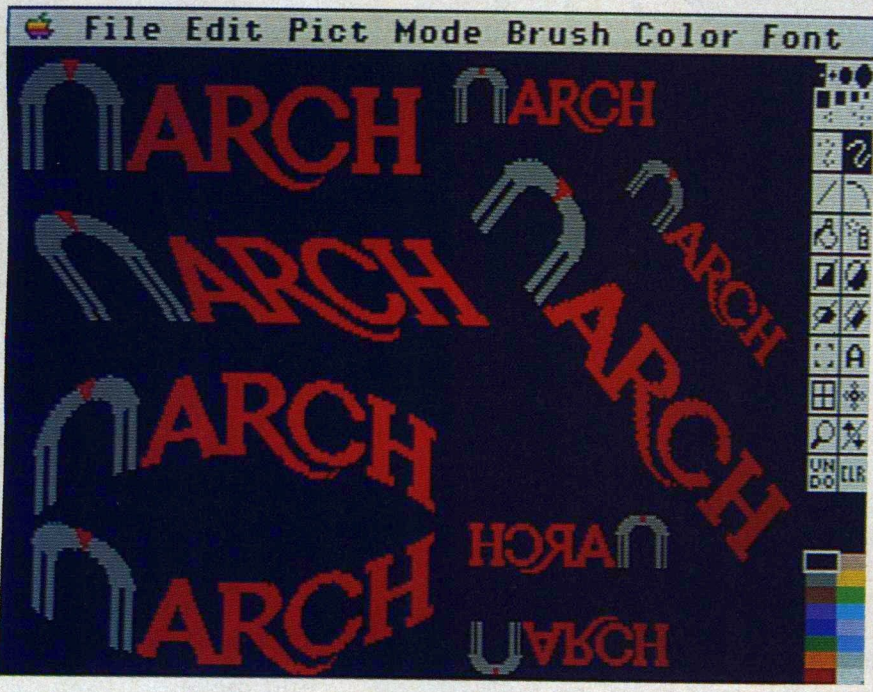
An unusual tool in the DeluxePaint toolbox is Symmetry. When Symmetry is on, all the tools produce multiple strokes. By pressing the open-apple key and clicking the mouse on the Symmetry tool, you access a Symmetry Options dialog box. From this box, you can control how the symmetry will work. The options go far beyond other paint programs' mirroring functions and include a useful "tile" effect that repeats your brush or stroke on a grid rather than producing the normal radial symmetry effect.

Options and More Options

The real razzle-dazzle of DeluxePaint II comes from the options you have through pull-down menus and dialog boxes. Since brushes contribute so much to the power of this program, let's start with the brush effects. First, you can save a brush (and the palette setting that was in effect when you created the brush), so it's a simple matter to create clip-art libraries: Just select an area of a picture, cut it to turn it into a brush, and save the brush on a data disk. The lack of a scrapbook desk accessory on the Apple IIGS makes this function a tremendous time saver. (Speaking of clip art, EA's Art Parts Volume 1 has a collection of clip-art face parts called a facemaker, a sensational example of the power of the brush.)

You can apply just about any transformation imaginable to a brush: shrink it, rotate it, bend it, tilt it, stretch it, reduce it, change

In these illustrations, one brush – a logo (directly below) that was provided on the DeluxePaint disk – was transformed effortlessly in numerous ways.



its colors—the list goes on and on. Each effect is achieved effortlessly; your image undergoes much less distortion than it would in any other Apple paint program that we have seen (see illustrations on this page).

Perspective

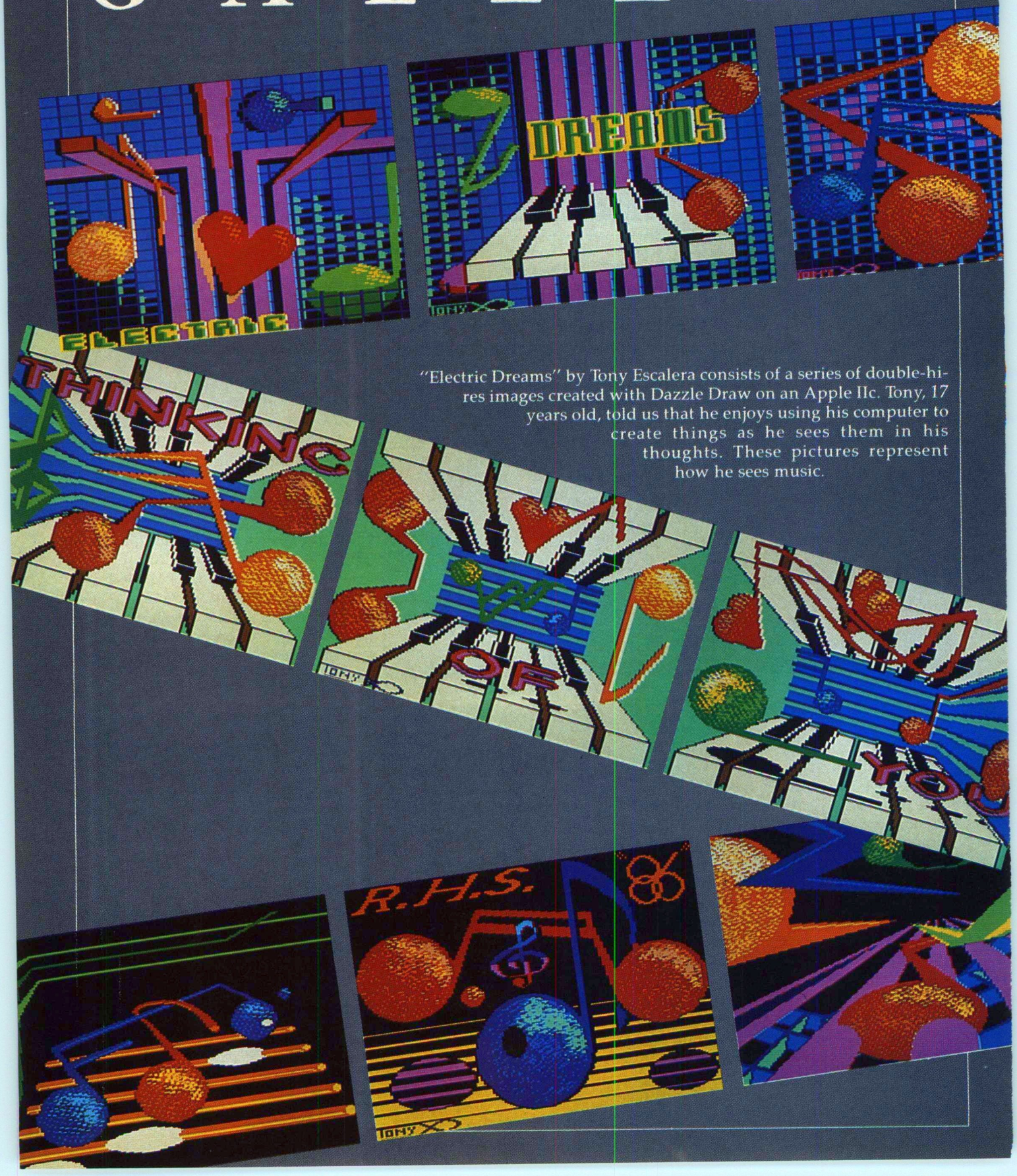
DeluxePaint II offers you true single-vanishing-point perspective on any brush, and using it is simple. Just make a brush and choose the perspective option from the Brush menu. A wire-frame box replaces your brush, and the vanishing point is indicated by crosshairs on the screen. You select the axis rotation you want from the numeric keypad, and the box instantly reflects perspective along that axis. Clicking on the mouse puts your brush down with that perspective. It's not fast with detailed brushes, but it does work and work well. DeluxePaint II is the only paint program for the Apple to offer such a function.

The Palette

DeluxePaint offers you a choice of RGB (red, green, blue) or HSV (hue, saturation, value) color mixing, and it provides a Spread function that allows you to generate intermediate shades of two colors instantly.

You can divide your palette into four ranges for color cycling, creating interesting pseudoanimation effects. Although other Apple IIGS programs offer color cycling, DeluxePaint II's four ranges set it apart from the crowd. These four ranges are mutually independent, allowing you to generate more

SPEAKING OF GRAPHICS GALLERY



"Electric Dreams" by Tony Escalera consists of a series of double-hi-res images created with Dazzle Draw on an Apple IIc. Tony, 17 years old, told us that he enjoys using his computer to create things as he sees them in his thoughts. These pictures represent how he sees music.

complicated effects than in programs in which only full-palette cycling is available.

Stencils

Are you sloppy when you paint? Then you can create a stencil by locking selected colors. As you paint with the Stencil function activated, the locked colors won't change. You can actually paint behind an object! You can even lock an entire picture so that any changes appear only on top of the picture—erasable and undoable. This technique prevents the heartbreak of a runaway fill. If you're happy with what you've done, you can unlock the background and add your additions to the bit map.

One of our favorite features is Spare Page, which gives you two separate graphics pages in memory. We often cut and paste between two graphics. With DeluxePaint II's Spare Page feature, we can load our source page (a page of clip art perhaps) and, using the Brush function, cut and paste onto our final screen. Once again, DeluxePaint II compensates for the absence of a scrapbook by providing an equally workable substitute.

And More

Remember when we wrote about jaggies (aliasing) in our July column? We told you how you could manually and, we must admit, tediously compensate for this problem. Well, DeluxePaint offers automatic anti-aliasing.

Another goody is the info bar, which you can select to show x- and y-coordinates, your color painting mode, the currently selected type of fill, and so on. When you want to place images at specific x- and-y coordinates, the availability of a coordinate display is invaluable—perfect for those of us who work with programmers.

Now for the Complaints

As much as we appreciate and, yes, love the functions DeluxePaint provides, getting to some of them is more difficult than it should be. Some of the keyboard shortcuts bear no relation to the command they're activating.

For example, you use the space bar to abort the current command. We're used to the Esc key for that function, but that key is already in use to toggle the cursor on and off. We guess that there was minimal, if any, change in the command keys from the program's predecessor, the Amiga version of DeluxePaint II. Unfortunately, Apple II conventions are different from Amiga conventions, and we hope that the software developers who are doing such conversions will modify their programs to abide by Apple standards rather than maintaining the standard of the original computer for which the programs were written.

As much as we appreciate the functions DeluxePaint II provides, getting to some of them is more difficult than it should be.

DeluxePaint's 640 × 200 mode is a disappointment because Electronic Arts chose to adhere to the strict four-color limitation of this mode rather than utilize the inherent dithering capabilities of the Apple IIGS hardware. To go beyond the four pure colors that DeluxePaint provides, you must create brushes from hand-tooled mixes—not that hard to do, but we'd prefer more direct access to dithered patterns. Also, DeluxePaint cannot load 320-mode pictures into the 640 mode (or vice versa). We know that such transfers create color problems, but the bit maps are the same, and it would actually have been simpler for the Electronic Arts programmers to allow such loading rather than inhibit it.

DeluxePaint II is copy-protected by a key-disk scheme. You must insert the key disk as the program is starting up from a copy of the original disk. Such a scheme is preferable to full copy-protection, but it is still annoying. Interestingly, Electronic Arts will sell you an unprotected version of the program for $20 when you return your registration card—a scheme that other software developers have been using too. We think it would be more honest, and much less bothersome, if the company would just add the extra $20 to the original price and sell the program unprotected. Given the functionality of DeluxePaint

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II, it would be a bargain at twice the price.

That about sums it up. Be aware that this is a complicated program. If you want to explore all its features, you'll have to work at it. Fortunately, the program comes with a thorough manual that has excellent tutorials. Perhaps you've gotten the idea that we like this product? We do—it simply blows the competition away.

All in One

Speaking of competition, just as this column was going to print, we received Baudville's new paint program, 8/16 Paint. Although its paint options don't compare with those of DeluxePaint, there are some compelling reasons for taking a serious look at this program.

Perhaps you've gotten the idea that we like DeluxePaint II. We do—it simply blows the competition away.

8/16 Paint is an Apple II program for everyone, not just for IIGS users. It comes on two disks: one for the standard- and double-hi-res modes and the other for the super-hi-res modes. If you own an Apple IIGS and have to create standard- or double-hi-res graphics for use elsewhere (perhaps in your school), or if you have yet to upgrade to an Apple IIGS, 8/16 Paint will fill the bill.

Further, its maker, Baudville ([616] 957-3036) includes file-transfer utilities to transform DOS 3.3 standard- or double-hi-res graphics into super-hi-res graphics. Neither the file-transfer utilities nor the standard- and double-hi-res versions were available in the initial release—early purchasers received a coupon for a free upgrade to the full release.

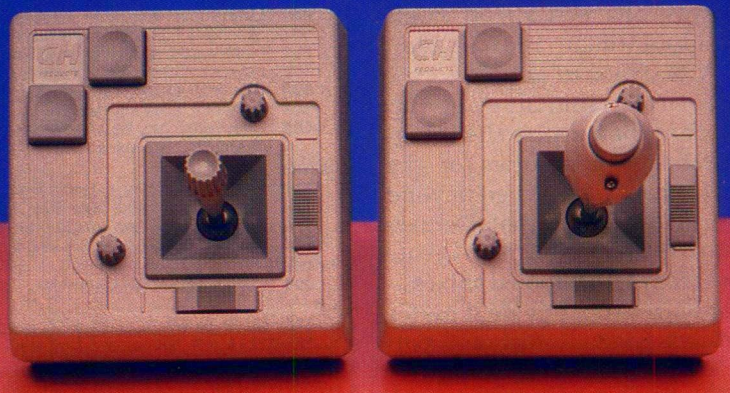
Here's another very good reason to get 8/16 paint. In the super-hi-res mode (640 × 200), you get the dithered 16-color palette we feel is sorely lacking in DeluxePaint II. With this program, you can load 320-mode pictures into the 640 mode and vice versa.

Summing Up

We'll look more closely at 8/16 Paint in a future column. As you can see, the Apple IIGS world is no different from the rest of the Apple II world. One paint program may be all the occasional artist needs, but many of us will want more—each for its distinctive features.

How wonderful to have such abundance! Happy Thanksgiving! ✚

SURVIVAL
of the fittest



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ENTERTAINMENT

GAMEPORT

BY BOB LINDSTROM

Wizardry IV finally makes its wicked debut, and so does romance software for the distaff side.

WORTH THE WAIT

Have you ever missed a bus? Turned in a term paper after it was due? Missed someone's birthday by a day? Forgotten a wedding anniversary?

Don't worry about it.

Your amateur status is still valid until you've beaten the four-year record of Sir-Tech software. The inventive creators of the popular Wizardry series of role-playing games have promised but not delivered Wizardry IV since the 1983 release of Wizardry III: Legacy of Llylgamyn.

Game players have begged, cajoled, cried, torn their hair, and gnashed their teeth and for no good reason. Programmer Robert Woodhead was resolute in his intent to release no game before its time.

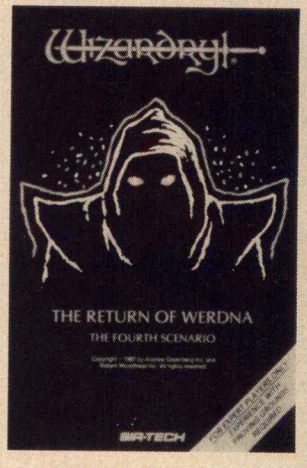
But the time has come.

Stop begging and start borrowing to buy Wizardry IV: The Return of Werdna. The sequel is here, and it promises to be the ultimate in role-playing, dungeon-mapping, challenging, frustrating, mind-boggling adventure.

It is a proud and unrepentant designer Roe R. Adams III who visits me with Woodhead to show off the results of their toil. They have no need to apologize for the delay. They may have taken more than four years to build this ten-level dungeon, but it inspires awe at first sight. With its distinctive personality, literate sense of humor, and wickedly inventive puzzles, The Return of Werdna proclaims the news that Wizardry Lives!

Adams describes Wizardry IV as a "mirror dungeon." No more Mr. Nice Guy, no more fighting on the side of right, no more keeping the world safe for chivalry. In The Return of Werdna, you are Werdna. You're mean, you're monstrous, and you're cheesed off.

After all, there you were—schmoozing with a few of your closest friends, evil wizards, and demons—when in strolls this party of adventurers, uninvited. "They didn't even knock," chuckles Adams. And these guys were tough. Next thing you know, Werdna, you awaken ("Naked," Woodhead is quick to add) at the bottom of a dungeon with no spell



points, one hit point, and nary an object to your evil name. Some centuries it just doesn't pay to get up.

To escape from your predicament, you angrily must fight your way out. Charge past roving bands of goodie-goodies, solve the mysteries of the multifarious dungeon, and emerge into unfettered freedom, once more at liberty to terrorize the innocent and exploit the unsuspecting. "We're attempting to evoke this feeling of rage and revenge," explains Adams. "If you use it, if you channel it, it gets you higher in the game."

Roe Adams III and Robert Woodhead

GAMEPORT

But what lies overhead as Werdna searches for an exit from his windowless, doorless prison? What traps will you find concealed in the dungeons of Wizardry IV?

Insidious smiles creep over Woodhead and Adams' faces as they describe the Whirling Dervish Dungeon, the Creatures of Light and Dark Dungeon, the Maze of Wandering, the Dungeon of a Thousand Cuts, and the three-level Cosmic Cube. Mapping virtuosity is mandatory as players plot their way through mazes of alternating light and dark, a labyrinth in which the walls are in constant motion, and a three-dimensional dungeon that Adams calls a sadistic Rubik's cube.

Demented dungeons aren't the only innovation of Wizardry IV. Something new has happened to the combat system as well.

Instead of acting as an omniscient overlord who dictates the actions of every party member, the Wizardry IV player controls only the movements of Werdna. The rest of the party members act on their own, according to their abilities and inclinations. If you assemble a stalwart band of colleagues, they may provide healing when they notice that you're getting getting the worst of a fight. Or they may support one another while you're busy casting spells. On the other hand, a group of chicken monsters might turn tail at the first threat of adversity.

Graphically, Wizardry IV uses an enhancement of the elegant windowing system that Woodhead designed for Llylgamyn. Those graphics now represent the output of a sophisticated dungeon-development system that has occupied Woodhead's talents for the past several years and accounts for the delay in releasing this new scenario. With this development system in operation, Woodhead can program Wizardry scenarios much more rapidly than before. Another

Viewmaster 80

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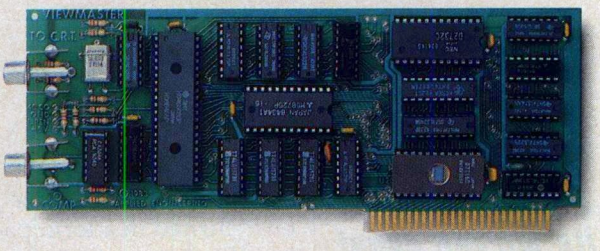

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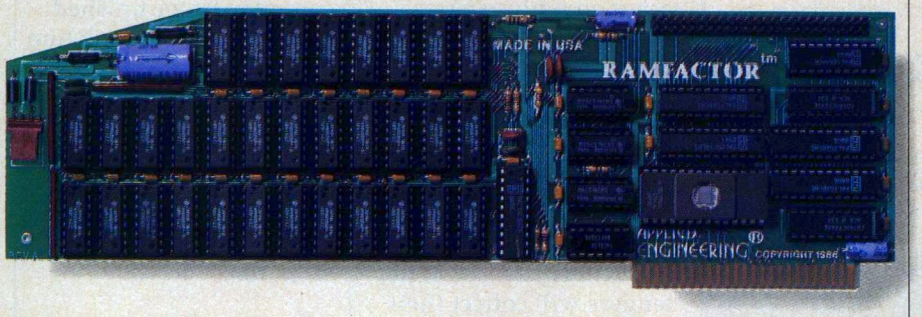

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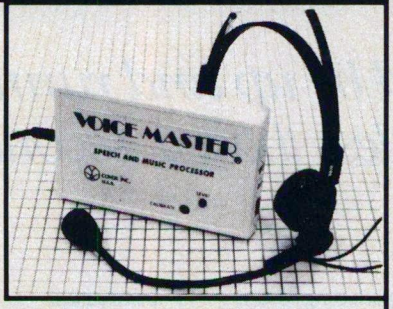

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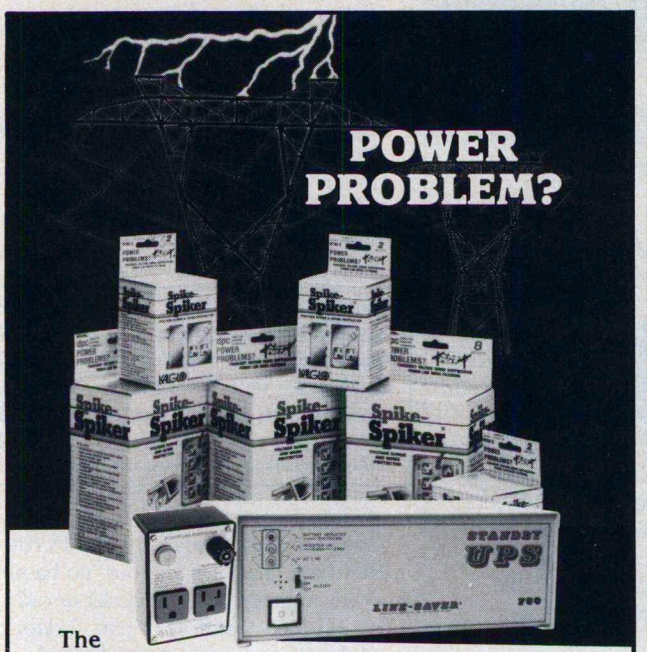

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GAMEPORT

four-year wait seems unlikely, he assures.

One other addition will earn the thanks of Wizardry lovers. You can save games in the dungeon; no more late nights, no more nagging parents, no more disgruntled wives and husbands impatiently waiting for you to reach safety.

The conventional Save and Dare strategy of other adventure games won't work in Wizardry IV, however. Each dungeon level has a finite number of opponents. Wipe them all out and you're free to explore without danger. But, if you save a game to collect your thoughts, your challengers will collect their powers and regenerate. No matter how triumphant your past battles, you reenter a saved game with the maximum number of opponents back in the dungeon. Use the Save Game option sparingly, unless you're prepared for unlimited hackenslash labors.

Only the hearty will survive Wizardry IV. Designer Adams is adamant that previous Wizardry experience is required for playing Wizardry IV. Only players with a full knowledge of Wizardry spells, lore, and strategy will persist to see one of the multiple endings in The Return of Werdna. "Less than five percent of the people will probably reach the definitive ending," predicts Adams.

In an effort to flush out the finest, Sir-Tech is sponsoring a Master Adventurer Contest. Those who complete the adventure will receive a Master Adventurer certificate. Those who finish in a minimum number of moves will be proclaimed Grand Master Adventurers. And just so everyone stays honest, Sir-Tech's telephone hot line will not be giving clues until the fourth week of Wizardry IV's release. Don't get too confident. Only one play tester finished the game, and it took him 150 hours.

Werdna is back, and Sir-Tech's got him. If you are among the thousands of computer game players with the Wizardry bug, you'll want to get him, too.

SOFTWARE FOR THE REST OF YOU

Typically, men have dominated the computer-game market. That fact distresses publishers who believe they could realize big profits from the ladies if they could only find something that appealed. Infocom targets the women's market this fall with Cupid's dart. They're offering a text adventure, Plundered Hearts, inspired by those panting, passionate, and often puerile romance novels that glut paperback-book shelves at the local Rexall. Could a computerized Barbara Cartland be in our future? Read the shocking, searing, scintillating answer in . . .

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- Moving from program to program — at will
- Simplicity
- Speed
- INSTANT ACCESS!

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Power on to AppleWorks	2.8 Sec.	22 Sec. *
Control A- Reset to AppleWorks	2.9 Sec.	28 Sec. **

*Requires Battery backup option
**Requires Ramfactor (or apple [slot] compatible) Memory Expansion

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GAMEPORT GAMEPORT

THE PARSER OF PASSION
A Mannequin Romance Novel

The cobalt Mediterranean sparkled brilliantly against the sides of Tiffany's candyflake pink Ferrari, a four-wheeled parting gift from Lance.

The swine.

She edged the car toward the shoulder and paused as brimming tears blurred the roadway. Tiffany stared heartbroken at the water. The shifting points of light couldn't help but remind her of the stars in her eyes when she first sighted Lance's broad-shouldered beauty across a Monte Carlo casino and her heart swelled in an explosion of soaring passion.

She succumbed in bittersweet reverie to the memory of that now-lost time. Those days were transcendent: picnics in the surrounding hills, afternoons in the grass, midnight swims. For the eighty-third time in her life, Tiffany knew unbounded happiness.

And then he'd left her, left her for that female Rolls mechanic—the grease-stained hussy. What could console Tiffany, who'd given Lance some of the best weekends of her life? All that remained of Lance Loves Tiffany was this $50,000 sports car, a paltry return for 18 days of dedication.

Tiffany pressed her foot petulantly against the gas pedal and didn't stop until she reached Cherchez le RAM, Monte Carlo's most exclusive computer boutique.

"May I help you with anything?" murmured a semi-manly voice. As the door shut behind Tiffany, their eyes met. Her heart soared in a swell of exploding passion.

The horn-rimmed glasses, the ink-stained pocket protector, the plaid pants and penny loafers—he was perfect. Deeply, meaningfully,

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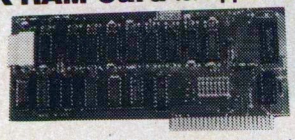

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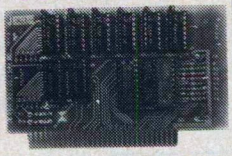
Appleworks Compatible!



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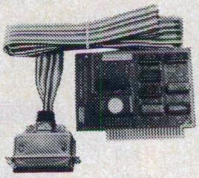
for Apple II, II+ and *IIe*



The JE880 is a parallel printer interface for most of today's dot matrix printers • 64K Buffer card for JE880 is also available (JE883, below) • Complete with instructions

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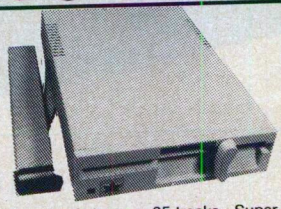
JE883 64K Buffer for JE880 . . . . . $49.95

5¼" Half Height Disk Drive
for Apple II, II+ and *IIe*



• Direct drive • 143K formatted storage • 35 tracks • Super quiet • Works with Apple Controllers or other Apple compatible controllers (JE875, see below) • Complete with connector – just plug into your controller

ADD12 Disk Drive (for II, II+ and *IIe*). $99.95
JE875 Controller Card (for II, II+ and *IIe*). . . . $49.95
ACC Adapts std. Apple drives for use with *IIc* $14.95

5¼" Half-Height Disk Drive
for Apple *IIc*

Same specs as ADD12 (above) except no controller needed.

ADD2C Disk Drive (for *IIc*) $109.95

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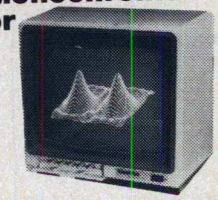

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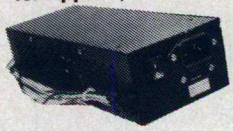

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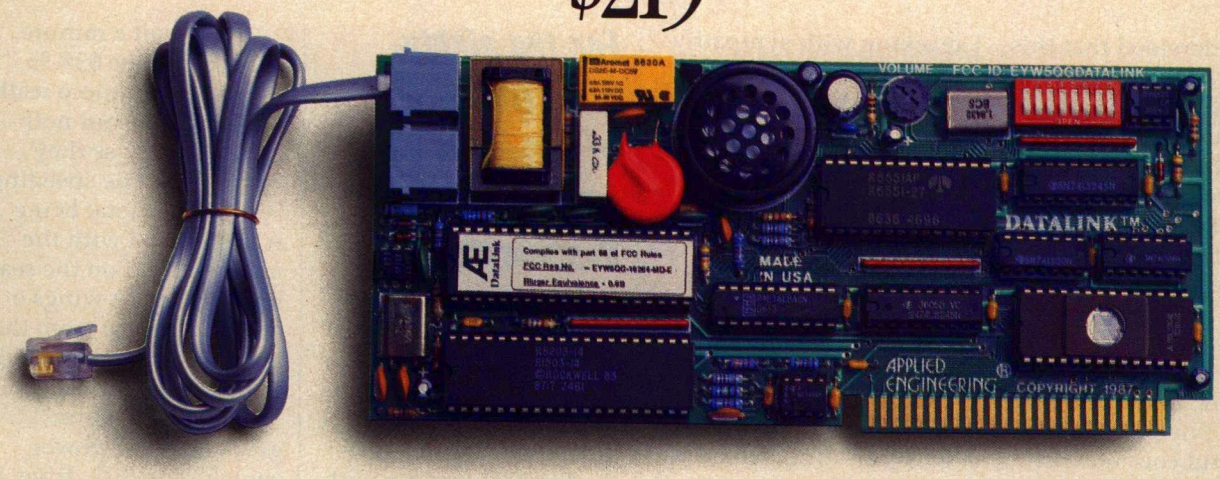

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Fits any slot (even with fan)	YES	NO

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GAMEPORT GAMEPORT

she understood that this man was her destiny for the next few minutes.

Though she fought valiantly to resist temptation, though every fiber of her being told her to keep still, to never trust another man, she quickly found herself pouring out the events of the past weeks to this mysterious stranger. She cried. She raved. She pounded the checkout counter and wove a pathetic tale of misplaced trust and jet-set despair. "I need something to take his place,"she whimpered.

"We have some nice spreadsheets over here," he said, his voice cracking with sympathy and new-found puberty. Tiffany's red-rimmed, lavender-shadowed eyes raced to the games shelf, however, and to a new and tantalizing Infocom product: author Amy Briggs' gothic romance adventure Plundered Hearts.

Penitent pirates and purloined princesses in a potent plot of provocative, pulsating passion—at last, a text adventure that we can share woman to woman, thought Tiffany. Her heart exploded in a passion of soaring swelling.

As if guided by an unseen force, her hands in-

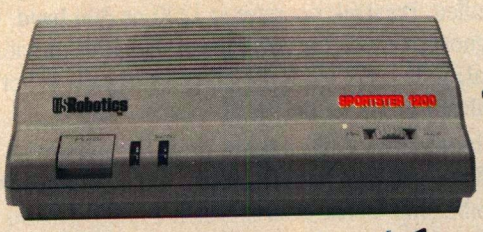
For the eighty-third time in her life, Tiffany knew unbounded happiness.

stinctively knew what to do. They gripped the package hungrily, desperately, and she ran to the Ferrari weeping with the joy of unexpected fulfillment. Not quite sure what was dream and what was reality, Tiffany's ears plucked out a voice echoing remotely in the distance.

"Hey, wait a minute, lady! That'll be $39.95."

The white stucco walls of Monaco meant nothing to Tiffany as they rushed past the speeding Ferrari. Her total being was obsessed with the magnetic text on the seat beside her. On wings of desire, she flew from the auto and floated through her Gucci-inspired villa.

Tiffany's fingers groped for the power switch. The disk drive throbbed as its head pressed gently against the computer media. The screen lit up, and Tiffany's heart soared in a passion of explosive swelling.



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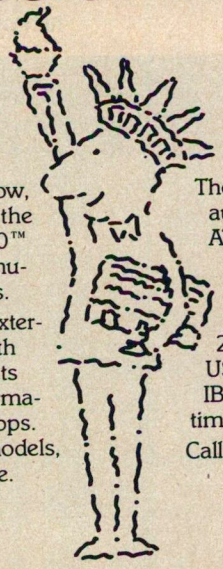
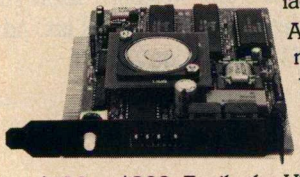


A new line of modems from $139. At prices this low, you might expect a modem to come from across the ocean. But the beautifully compact Sportster 1200™ comes from USRobotics, a leading American manufacturer for over 10 years.



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For quick reference, the bottom panel contains a printed operations summary. You also get a 28-page user's guide, a two-year warranty, USR's Telpac™ Communications Software for IBM users, and a free subscription and connect time to the CompuServe® information service.

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CIRCLE 214 ON READER SERVICE CARD

GAMEPORT

"Yes, yes, yes," she sighed, "Oh yes. If purple verbosity be the food of love, type on . . ."

And as Tiffany surrended to her fantasy world of unrequited lust and animal affection, the hearts of literate women around the world passed out in a swell of explosive soreness.

THE BEST-LAID CHEATS OF MICE AND MEN

We tried to help struggling adventurers in the August "GamePort." Honest, but the fates and the play testers conspired against us.

Several "GamePort" readers wrote and phoned their frustration over the Ultima IV balloon tip the column offered. They couldn't find the dungeon. They couldn't leave the balloon without X-iting.

Sorry, a slip of the finger misnamed the dungeon in question. If you drift northwest of Lord British's castle, you'll reach the dungeon Shame. Error corrected.

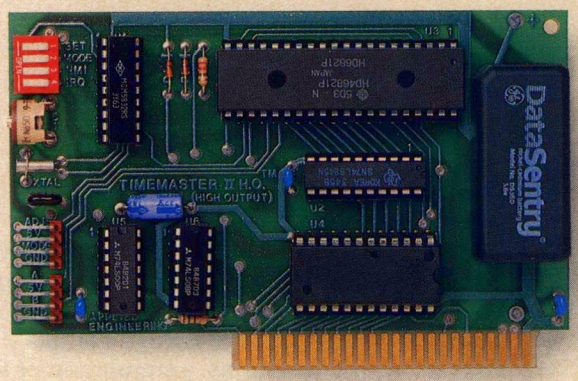
The programmers of Origin Systems are also good at correcting errors. The program bug that allowed some Ultima IV players to X-it from a balloon without descending was present only in an earlier version of the program. This program quirk was eliminated in subsequent releases. If you don't have one of the first Ultima IV packages, you'll have to rely solely on your native role-playing skills. ✚

BY TOM MURRAY

LAUGHTRACK

SILICON CHIPS AND SOME DIP

The first clock card to add time and date to AppleWorks'™ screens and files.



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ENTERTAIN

This month's choice of games let you manage your own Earth Orbit Stations, engage yourself in a powerful computer novel, and do combat with a multiplayer real-time fantasy war game.

SPACEY COMMERCE

"A long time ago in an intergalactic savings and loan far, far away . . ." EOS: Earth Orbit Stations, a simulation of interstellar commercialism, seems based on the assumption that the cosmos won't be explored by renegade star jockeys in helmets and pressure suits. Rather, rocket ships loaded with Junior Achievers of the 21st Century will carry their pinstriped cargo to the farthest and most profitable reaches of the galaxy. And there, where the sun specks the darkness, they'll build industrial space stations, floating research laboratories, and fast-food restaurants.

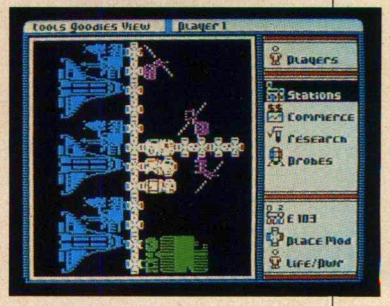
Although programmer Karl Buiter's creation is aimed at the skies, it reaches back to the roots of computer simulation. The futuristic commodities of EOS are communications satellites, space platforms, and solar collectors, but at the heart of EOS is a state-of-the-art rendition of the financial simulations Lemonade and Hammurabi.

Up to four human or computerized players can participate in EOS, manipulating its manifold options with a logical and well-designed set of on-screen windows and menus. Keyboard and joystick controls are simultaneously available throughout the game. EOS has a notable playing restriction, however—it does not work on the Apple IIGS.

Planetary tycoons begin with an allotment of cash credits and one of seven missions to accomplish. Missions range from such crass tasks as taking short-term profits in technobucks to venturing on a ten-year quest to discover life on other planets.

To realize these goals, players buy modules to build vast orbiting space stations. Some modules—such as life support, galley, and gym—are devoted to maintaining the lives of those brave enough (or unemployed enough) to take a job on an artificial satellite. Other modules—such as agriculture labs, shuttleports, and building platforms—can be dedicated to profitable commerce or to beneficial but costly research.

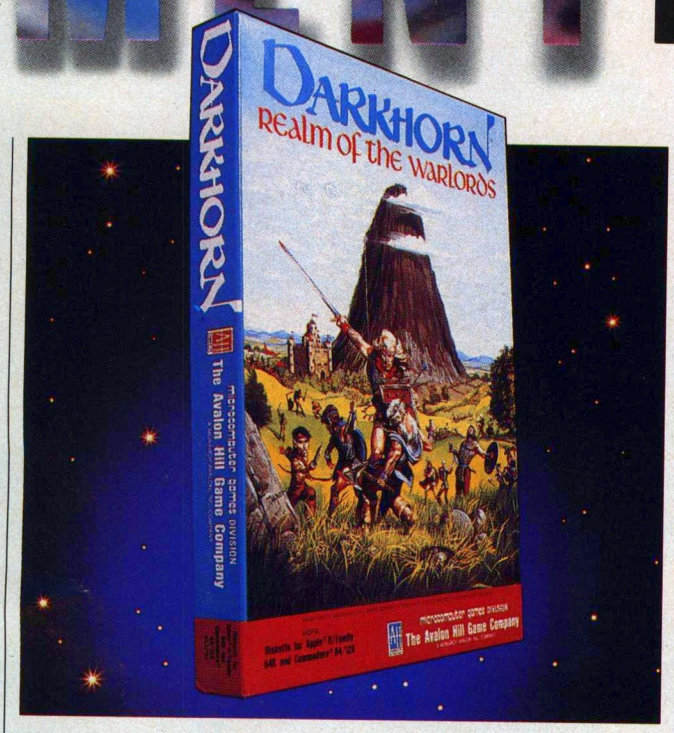
This orbiting monument to profit-taking doesn't exist in a vacuum—well, at least not in a financial vacuum. With each simulated three-month turn, the program fabricates statistics and headlines on market prices, consumer and industrial demand, and hot investment prospects. The canny project manager will buy pharmaceutical modules when medicine is in demand or construct solar collectors during oil shortages. The more closely module investments follow demand, the higher the prices you can charge for your wares.



Playing J.R Ewing in space isn't enough, however. You also have to commit research dollars to develop technology for accomplishing the more challenging missions. Without space-dock technology, for example, you can't launch extensive exploration of other worlds.

The depth and breadth of EOS are impressive. The simulation encompasses shuttle-mission scheduling, space-probe

MENT REVIEWS



launching, use of advertising to enhance profitability, and the construction of habitations on other planets. Depending on the mission you choose, a game of EOS can last from 2 to 40 hours. One drawback: Novices will spend a long time deciphering the manual, a crowded and confusing 14 pages of pseudo-tutorials and befuddling charts.

Although you can save a game in progress, perhaps only a dedicated industrialist of the future will sustain interest through a 40-hour marathon. EOS is a stunning achievement in computer simulation, but the endless parade of news bits, sales figures, and price indexes grows ponderous after several hours of play.

Simulation fanatics will admire the long-term variety and playability of EOS. Casual star merchants may prefer to dip only shallowly and occasionally into the depths of Buiter's simulated universe.

Bob Lindstrom

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(415) 571-7171

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CIRCLE READER SERVICE NO. **415**

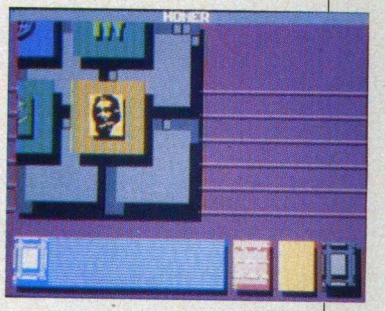
A NEW WAY OF READING

Looking for a game filled with exciting challenges? Portal, from Activision, may do the trick if your idea of a challenge is reading a complex, multilayered narrative. If you insist on mazes and hit points—or if you want a thousand possible endings—look elsewhere.

Portal deals with important issues that are anything but fantasy: adolescence, sexual identity, and political oppression. Its richly detailed, futuristic world is only slightly removed from our own. Technology and government are logical extensions of what you'll find in this morning's newspaper.

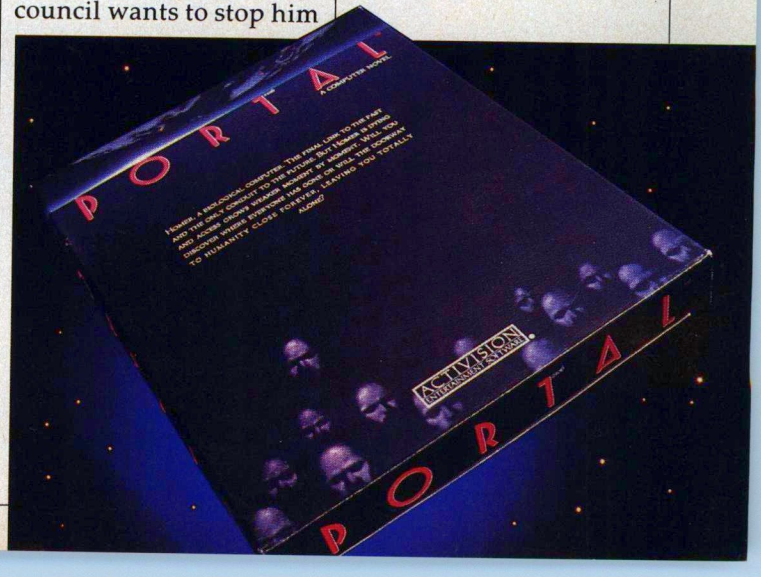
Activision bills this program as a "true computer novel," and that's exactly what it is. It contains powerful images: a small girl freezes to death while playing an innocent game. A woman, no longer able to sense the placement of her hands, weaves tapestries in a house filled with mirrors.

The story has a hero, too: 16-year-old Peter Devore. A computer malfunction enables Peter to find and master the Psion equations, which then lead him to the Portal—the way out. Peter wants to give this technology to everyone, and the ruling council wants to stop him from doing that.



What Portal offers is a new way of reading a story, rather than a new kind of story to read. You approach the game as a space traveler who returns to earth a hundred years after leaving it. There's no sign of violence, but everyone is gone. Your only link to the rest of humanity is a single computer terminal that lets you tap into Central Processing, History, SciTech, and several other "dataspaces"—including an artificial-intelligence unit named Homer.

With this terminal, you float over a three-di-



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HOW TO ORDER: VISIT YOUR RETAILER OR CALL 800-245-4525 FOR DIRECT VISA OR MASTERCARD ORDERS (IN CA CALL 800-562-1112). The direct price is $29.95 for the C-64 version and $39.95 for the Apple version. To buy by mail, send check or money order to Electronic Arts Direct Sales, P.O. Box 7530, San Mateo, CA 94403. Add $3 for shipping and handling ($5 Canadian). There is a 14-day, money-back guarantee on direct orders. Screen shots represent the C-64 version. Other versions may vary.

ELECTRONIC ARTS®

REVIEWS

Portal offers a new way of reading a story, rather than a new kind of story to read.

mensional grid, choosing the dataspaces and files you want to explore. New files appear when you've read the existing ones. Factual dataspaces give you the context, and Homer reconstructs the narrative and dialogue. It's like reading an annotated classic, but in this case the commentary lies directly in your path, rather than discretely in the margin.

The process of entering and leaving a dataspace is slow because of heavy disk access. The manual coyly apologizes for the input devices you're stuck with; if only you had a proper "mindlink-device," things would go much faster. (Portal can accept input from a keyboard or joystick but not a mouse.)

Gamers who thrive on strategy will be frustrated by the rigid sequence they must follow. Readers who thrive on narrative will be frustrated by the awkward interface that they have to go through. Trying to bridge two worlds, the program may end up pleasing no one.

If that's true, it'll be too bad. The writing in Portal is graceful, sometimes even poetic. It deserves a wider audience. Not every game has to be filled with catacombs and frenzy, and not many games are as close to their literary roots as Portal.

Tad Davis

PORTAL
Activision, Inc.
P.O. Box 7287
Mountain View, CA 94039
(415) 960-0518

LIST PRICE: *$44.95*
REQUIRES: *Apple II Plus, IIe, IIc, or IIGS; 64K RAM; one 5¼-inch disk drive; joystick and color monitor optional. Copy-protected.*

CIRCLE READER SERVICE NO. **416**

TOWER CAMPAIGNS

Strategy games are for military historians; fantasy games are for role-playing adventurers. These two markets share the same conventions and many of the same players.

Darkhorn, from the Avalon Hill Game Company, is both a fantasy and a strategy game with some new ideas. New ideas are badly needed in the world of computer war games, where too many products appear to be routine, lifeless conversions of board war games (without even the fun of rolling your own dice).

The most interesting new idea in Darkhorn is a multiplayer real-time game system that means *no waiting* for your turn! Up to four players can huddle around the computer, using different sections of the keyboard, two paddles, or a joystick in any combination. If

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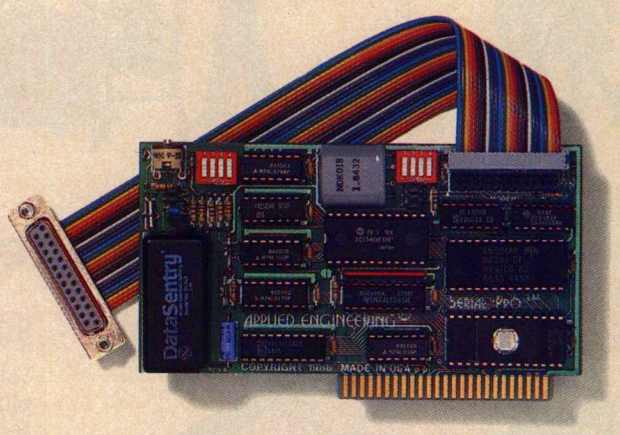

Serial Pro is a powerful multifunction card for the Apple IIe, II+, IIGS and compatible computers. Serial Pro combines a powerful serial port for interfacing to a printer, modem or other serial device, with a full function clock/calendar. Serial Pro's serial port is compatible with virtually all letter quality and dot matrix printers, including Apple's Imagewriter and Imagewriter II, and can communicate with the fastest external modems at baud rates from 50 to 19,200.

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Serial Pro is perfect for Apple IIe, II+, IIGS or compatible owners in need of a serial port or clock/calendar or both. But unlike other multifunction cards on the market, Serial Pro does not use phantom slots, so all the slots in your computer are useable.

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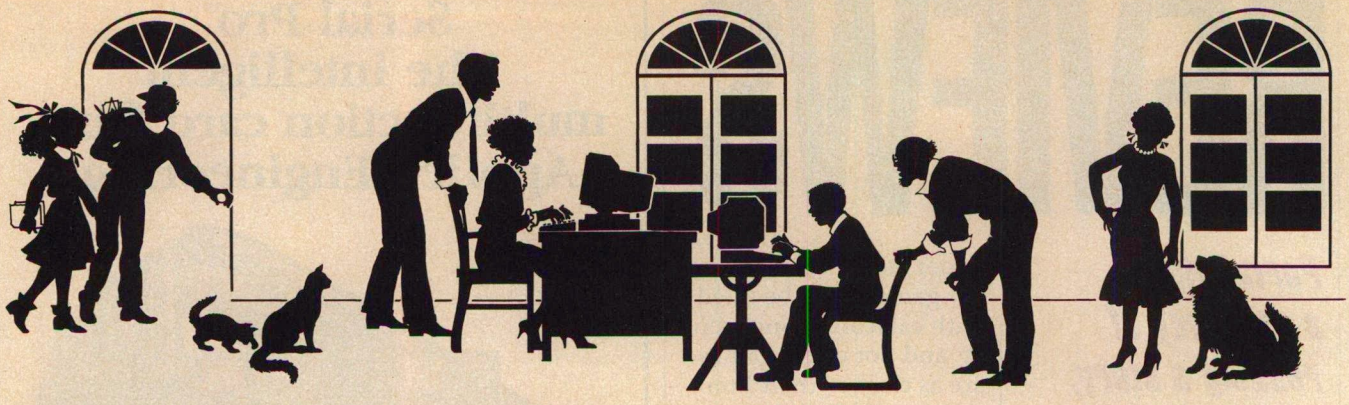

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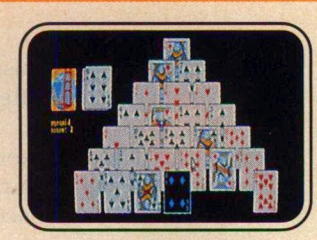
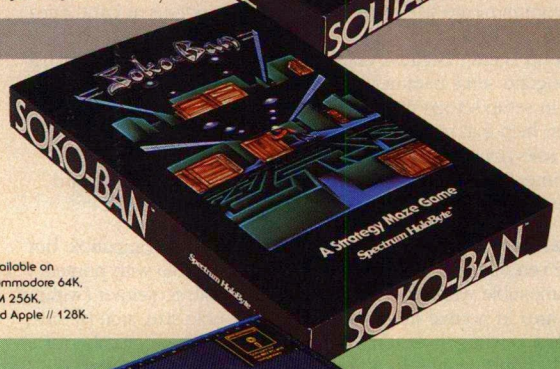
Solitare doesn't necessarily mean you play alone. Eight kinds of solitaire are presented in a unique and entertaining format to be played individually or competitively. Choose from 10 beautiful card decks. For the children, three additional games are included. It's a "must see" product and one you'll play for years!



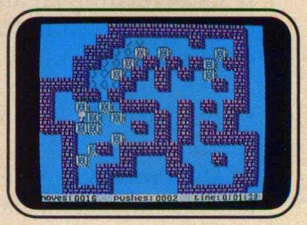
IBM EGA version

SOKO-BAN



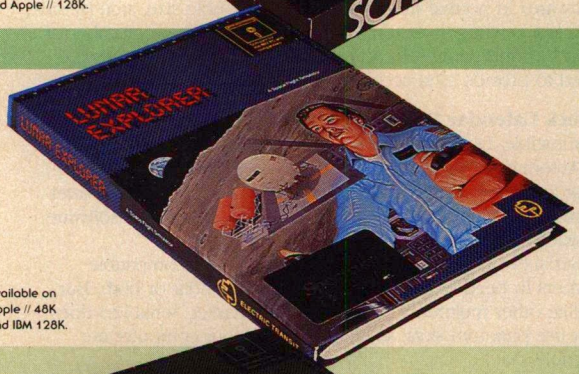
Available on Commodore 64K, IBM 256K, and Apple // 128K.

This maze strategy game will capture your interest the first time you play. Your challenge is to solve 50 levels of increasingly difficult mazes, then create an infinite number of mazes yourself with the option to save 49 of them at a time. Number of moves and pushes plus time elapsed are important factors in scoring. Improve upon your scores each time you play.



IBM version

LUNAR EXPLORER



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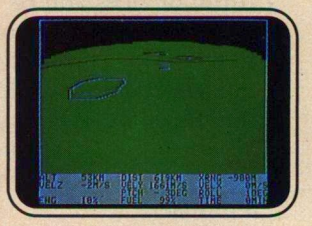
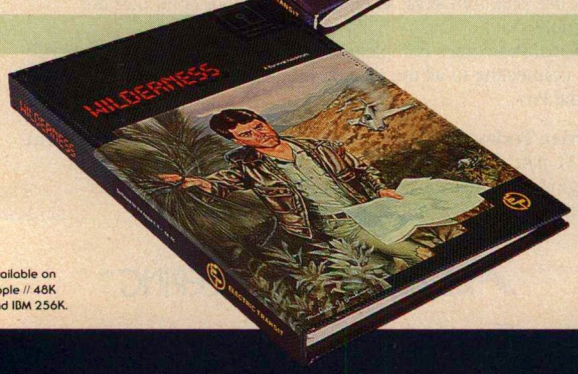
You are in control of a lunar landing vehicle. While exploring the moon and investigating all its rills and craters, take time to marvel at "out the window" views of constellations, the Earth rising over the lunar horizon and the Apollo 11 landing site. Eight exercises are available to learn piloting maneuvers. Scores meassure accuracy of navigation and efficiency of fuel consumption.



Apple // version

WILDERNESS



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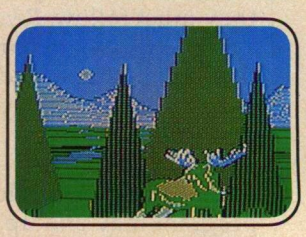

Apple // version

CIRCLE 142 ON READER SERVICE CARD

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Spectrum HoloByte™
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you can't round up that many friends, you can assign the computer to play up to three positions.

The object of the game is to capture towers or castles. In a solitaire game, you win by capturing three of the four towers on the map. In a multiplayer game, you win by holding more towers than your surviving opponents.

Each player begins with two parties of warriors in the vicinity of his own tower. Generally, you use one party as a defensive garrison and the other as the offensive strike force. A party can move, fortify, recruit, or split up, limited only by its current supply of "action points." The maps cover a wide range of terrain types, and there are three "races" (men, dwarves, and elves), which enjoy different combat advantages, depending on terrain. Elves, for example, are recruited only in forests and fight best there.

The most interesting new idea in Darkhorn is a multiplayer real-time game system.

There are two ways of resolving combat when opposing parties collide. If you press the A key, the computer automatically resolves the combat. By pressing the space bar, the players initiate a series of duels between animated figures on the screen.

Darkhorn tends to favor the defense. A typical game begins with a gradual buildup of forces, followed by a war of position as players seek to gain control over key recruiting grounds. The endgame is a grueling battle of attrition. You can link a series of games into a grand campaign, but doing so would require incredible patience and determination.

Darkhorn is handsomely boxed, with an eight-page instruction booklet and a quick-reference card. One side of the disk contains the Apple II version, and the other side contains a Commodore 64/128 version. The game uses sound effects and music effectively but gives you the option of turning off the sound. On the Apple IIGS, you should set the Control Panel to the Normal system speed or choose the Very Slow

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- Fast conversion (.078 MS per channel)
- A/D process totally transparent to Apple (looks like memory)
- User programmable input ranges are 0 to 10 volts, 0 to 5, −5 to +5, −2.5 to +2.5, −5 to 0, −10 to 0.

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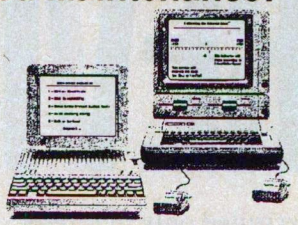

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REVIEWS

game option—otherwise the action is simply too fast to follow.

Like many games originally written in BASIC for the Commodore 64 or 8-bit Atari, Darkhorn

Darkhorn suffers from trying to cram too many ideas into 64K of RAM.

suffers in the Apple II conversion. The screen is much too crowded. The map, the situation display for each of four players, and the little animated dueling figures must all share the same screen. The overall quality of the graphics is disappointing, and the user interface is confusing, hard to use, and poorly designed. On a Commodore, with inherently better video graphics, you might be able to overlook these flaws. On the Apple II, however, they are fatal. Darkhorn suffers from trying to cram too many ideas into the limits of 64K of RAM.

A good game is one that instantly grabs your imagination. In Darkhorn, you're too busy struggling with the game system to become imaginatively involved in the battle.

Mike Markowitz

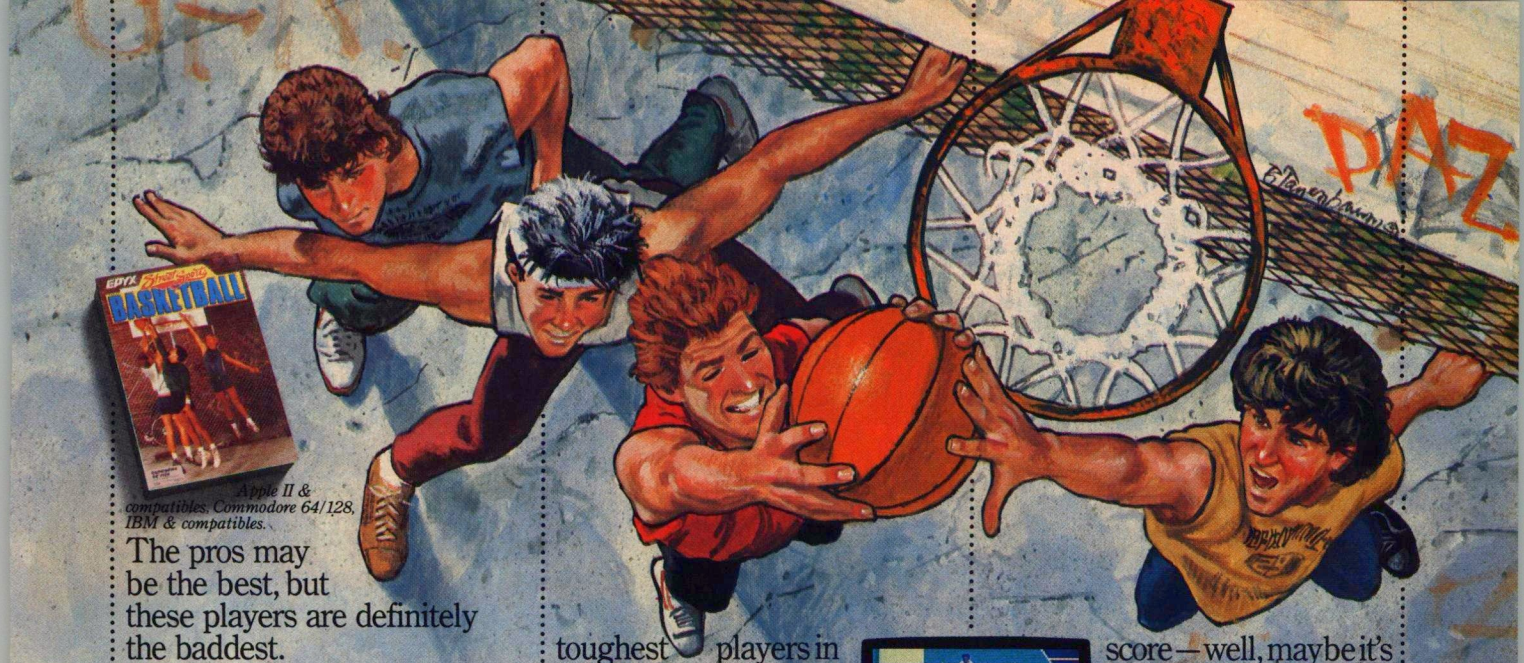
DARKHORN: REALM OF THE WARLORDS
The Avalon Hill Game Company
4517 Harford Road
Baltimore, MD 21214
(301) 254-9200

LIST PRICE: *$30*
REQUIRES: *Apple II Plus, IIe, IIc, or IIgs; 64K RAM; one 5¼-inch disk drive; joysticks, paddles, and color monitor recommended. Copy-protected.*

CIRCLE READER SERVICE NO. **417**

BY TOM MURRAY

LAUGHTRACK



Apple II & compatibles, Commodore 64/128, IBM & compatibles.

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Sometimes it's best to take a pass.

Bounce the ball off the chain-link fence, then go for the basket. Or power through a slam dunk.

But don't dribble in the oil slick. And for heavens sake, watch out for windows.

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ANOTHER HIT.

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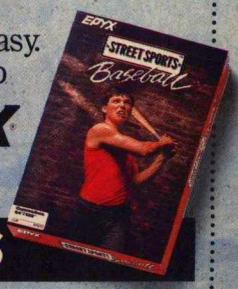
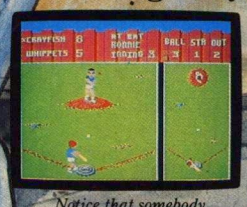


TASTE THE THRILL OF VICTORY AND THE AGONY OF THE STREET.



Notice that somebody just stole second base. Funny, it was here a minute ago.

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Firebird software for Apple and Macintosh systems, including the popular Elite, Golden Path, Starglider, Colossus Chess IV, Silicon Dreams, and Jewels of Darkness, is available from $24.95 to $44.95.

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CIRCLE 205 ON READER SERVICE CARD

BY MICHAEL WIESENBERG

PROGRAMMING PROGRESSIVE PERMUTATION

The answer to August's mathematical challenge

The August challenge asked for three three-digit numbers in geometric progression such that each is derived from another by cyclic permutation of the digits.

Many programs produced output with the nontrivial solutions repeated, which I didn't think was necessary. If you know that 486, 648, 864 is a solution, by the original conditions you also know that 864, 648, 486 is a solution.

Others came up with more solutions than I was looking for, namely those with zeros in them. For example, 100, 010, 001, are cyclic permutations, and they have a geometric progression of .1. I don't consider 010 and 001 three-digit numbers, however.

Almost all the swiftest programs used the same algorithm. They all ran in about 12 seconds. John Kuderka, of Colorado Springs, Colorado, sent a typical program:

```
10 X1 = 10 : X2 = 100
20 FOR A = 1 TO 9 : FOR B = 1 TO 9 :
   FOR C = 1 TO 9
30 N1 = A * X2 + B * X1 + C
40 N2 = B * X2 + C * X1 + A
50 N3 = C * X2 + A * X1 + B
60 IF N1 / N2 = N2 / N3
   THEN PRINT N3, N2, N1
70 NEXT C, B, A
```

A few clever programmers managed to cut the running time to about 8 seconds. One difference between their programs and the preceding, of which I received literally scores of the same, was that the slower programs used division for the test, whereas the faster programs used multiplication. Multiplication is a faster operation than division on most computers and is also more accurate. Division often produces round-off errors that invalidate the comparisons of certain operations.

Another difference was in not incrementing from 1 to 9 in all loops. I had to get that picky in my selection criteria, because otherwise I would have had to put all of the programs that were essentially the same into a hat and pick one at random. Honorable mentions go to Clay Ruth, of Dyer, Indiana, and Frank Winter, of Baltimore, Maryland.

Nearly all the solutions were in BASIC. Christian Foisy, of Laval, Quebec, and Danny Cory, of Chapel Hill, North Carolina, both sent Pascal programs that executed in under two seconds, and thus rate honorable mentions. Just to make things fair, for comparison, I rewrote them in BASIC, and they also ran in about eight seconds each.

The undisputed winner, however, more than halves (to 3.5 seconds) the best time of any of the previous entrants, and he does it by eliminating one of the three nested loops that all the other programs had. Harold Stiles, of Painesville, Ohio, is the August winner.

Stiles explains: We are looking for three numbers, such that

```
k * (k * abc) = k * bca = cab
```

where *a*, *b*, *c* are numbers between 1 and 9, inclusive, and *k* is a constant. Using the fact that the ratio of any two successive members of a

ILLUSTRATION BY DOUG PAULIN

AUGUST'S WINNING PROGRAM

```
10 PRINT "CBA", "BAC", "ACB","ratio" : PRINT
20 FOR C = 1 TO 9 : FOR B = 1 TO 9 : A = (C * C - 10 * B * B) / (B -10 * C)
30 IF A < 10 AND A - INT(A) = 0 THEN PRINT C; B; A, B; A; C, A; C; B,
   (100 * B + 10 * A + C) / (100 * C + 10 * B + A)
40 NEXT B : NEXT C
```

geometric progression is a constant, we have

$$\frac{bca}{abc} = \frac{cab}{bca} = k$$

or, by cross-multiplying

(bca) * (bca) = (cab) * (abc)

This equation can also be represented as

(100 * b + 10 * c + a) * (100 * b + 10 * c + a) = (100 * c + 10 * a + b) * (100 * a + 10 * b + c)

which, if we carry out the algebra, gives

999 * (c * c + 10 * a * c - 10 * b * b - b * a) = 0

We can solve this equation for *a* in terms of *b* and *c* to give

a = (c * c - 10 * b * b) / (b - 10 * c)

The program increments *c* and *b* from 1 through 9, calculates a value for *a*, and checks *a* to be an integer between 1 and 9 inclusive.

Stiles adds, "Thanks for an interesting opportunity to use my machine for something other than a word processor."

The geometric progression of the nontrivial solutions is 0.75; if the solutions were arranged from low to high, it would be 1⅓.

In the box below Stiles' winning program is a run with the puzzle's solutions. ✚

Michael Wiesenberg is the author of Puzzled Programmers, *a book of new computer puzzles published by Microsoft Press. September's "Computer Calisthenics" was the last to contain a new puzzle. Watch for a new column for the mathematically and programmatically minded in an upcoming issue.*

THE SOLUTIONS

CBA	BAC	ACB	ratio
111	111	111	1
222	222	222	1
333	333	333	1
432	324	243	.75
444	444	444	1
555	555	555	1
666	666	666	1
777	777	777	1
864	648	486	.75
888	888	888	1
999	999	999	1

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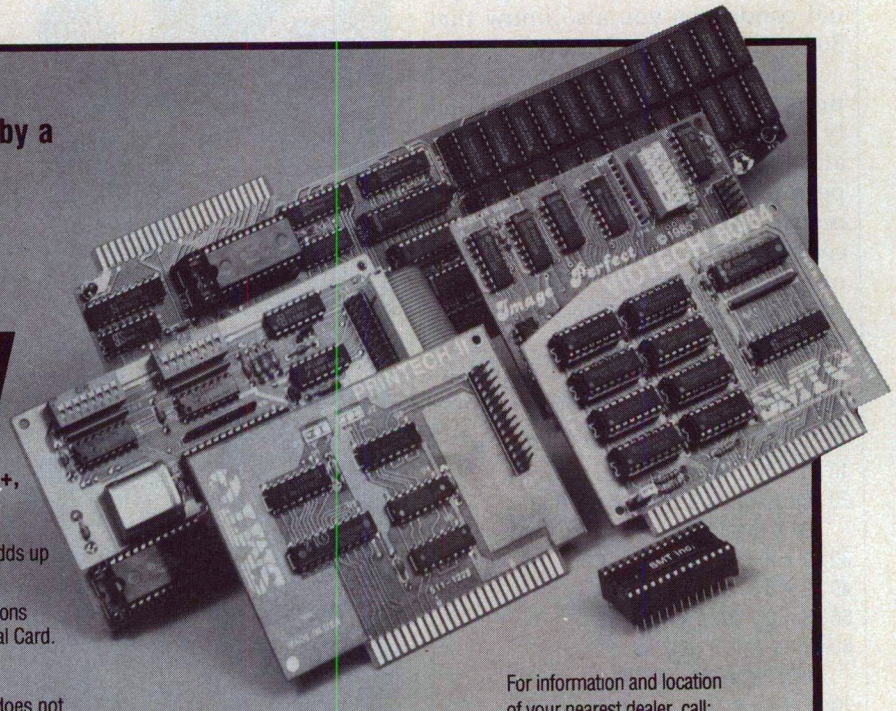

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CIRCLE 280 ON READER SERVICE CARD

TIPS AND TECHNIQUES

Readers share tips for the II

RANDOM-ACCESS DATA

Applesoft's READ and DATA statements are fine if you're reading in only small amounts of data or if you read the data only once during program execution. If you require multiple reads of data or need to read it out of the order in which it appears in the DATA statements, then using READ and DATA statements is troublesome—you can read DATA statements only sequentially, not randomly.

What Applesoft really needs is a command to RESTORE to a specific line number, where the line number contains the DATA statement you wish to READ. Although no such command exists, you can simulate it by manipulating Applesoft pointers. In the line immediately before the DATA statement you want to READ, you must PEEK the two-byte pointer at locations 121 and 122—the address of the statement being executed. Next, add 1 to this number and then PEEK the resulting two-byte pointer and subtract 1. This procedure gives you the address of the next line, which contains the DATA statement to be read. Finally, POKE this value into locations 125 and 126, which holds the memory address of the next DATA statement to be read. You can now READ the DATA statement.

The program in figure 1 illustrates this technique.

VINCENT D. O'CONNOR
BABBITT, MN

OPEN-APPLE AUTO-REPEAT

Editor's Note: We inadvertently misinterpreted Scott Corley's tip in the August A+. Here is the correct tip.

I'm not sure why, but the ⌘/open-apple key on the IIGS begins to automatically repeat if you hold down the Control and Delete keys at the same time. (Make sure you press ⌘/open-apple before holding down Control and Delete.) The system thinks that the push-button input it defines keeps switching between on and off, which is great for rapid firing in shoot-'em-up games. Change the Control Panel Repeat Speed setting to adjust the firing speed.

This same trick does not work with the Option (solid-apple) key. What happens instead is that the system thinks the Option key is always on, even if you release it. To return to normal, type Control/open-apple/Delete.

SCOTT CORLEY
GLENVIEW, IL

Please send your Apple tips to A+, 110 Marsh Drive, Suite 103, Foster City, CA 94404; ATTN: Tips and Techniques. We'll pay $25 for each tip we publish, so include your name, address, and social security number.

```
10 HOME : VTAB 3: PRINT "OPTIONS"
15 PRINT : PRINT "1. OPTION ONE": PRINT "2. OPTION TWO": PRINT
"3. OPTION THREE": PRINT
20 PRINT "CHOICE=› ";
25 GET A$: IF A$ ‹ "1" OR A$ › "3" THEN 25
30 ON VAL (A$) GOSUB 100,200,300
35 GOTO 10 1
00 A = PEEK (121) + 256 * PEEK (122) + 1: GOSUB 400: READ B$:
VTAB 12: PRINT B$: GOSUB 500: RETURN
105 DATA THIS IS OPTION ONE
200 A = PEEK (121) + 256 * PEEK (122) + 1: GOSUB 400: READ B$:
VTAB 12: PRINT B$: GOSUB 500: RETURN
205 DATA THIS IS OPTION TWO
300 A = PEEK (121) + 256 * PEEK (122) + 1: GOSUB 400: READ B$:
VTAB 12: PRINT B$: GOSUB 500: RETURN
305 DATA THIS IS OPTION THREE
400 B = PEEK (A) + 256 * PEEK (A + 1) - 1: POKE 125,B - INT (B /
256) * 256: POKE 126, INT (B / 256): RETURN
500 VTAB 23: PRINT "PRESS ANY KEY TO CONTINUE: ";: GET A$:
RETURN
```

Figure 1: Random-access DATA statements

BY SHANON CULLEN

A collection of interesting products for you and your Apple II-series computer

PRODUCT ROUNDUP

LEGO TC LOGO

LEGO TC Logo is a new system that allows children to write computer programs to control models they build out of LEGO elements. It includes a set of three student books and a teachers' guide to support classroom activities. The books, designed for upper-elementary and junior-high-school classes, guide students through a series of projects and discuss connections to ideas in mathematics, science, and social studies.

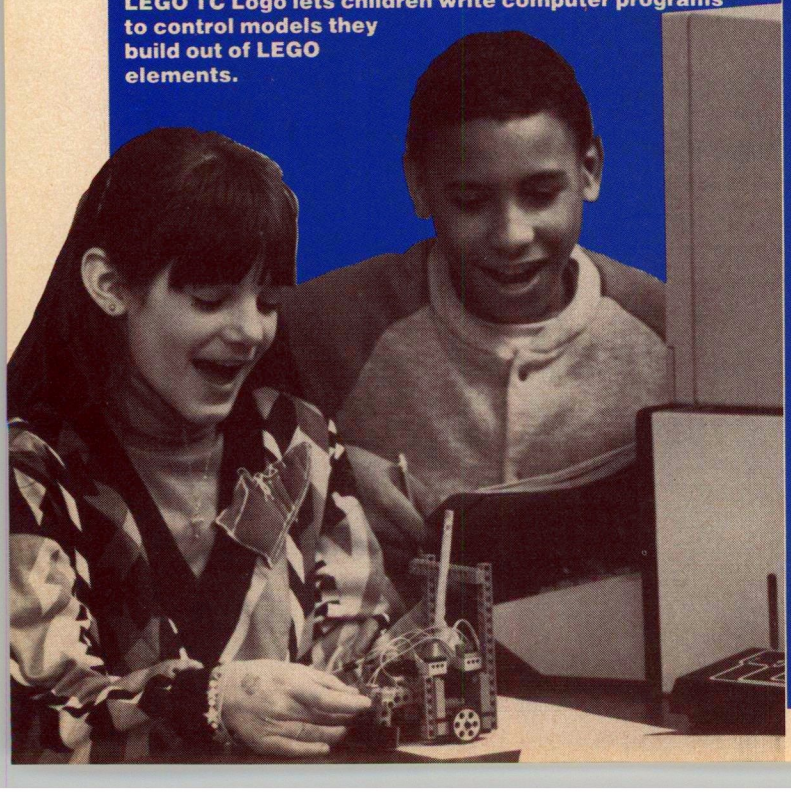
LEGO TC Logo is the result of a three-year collaboration between the Education Division of LEGO Systems, Inc., Microworlds Learning, Inc., and Seymour Papert's research group at MIT.

List Price: $450 for Starter Pack

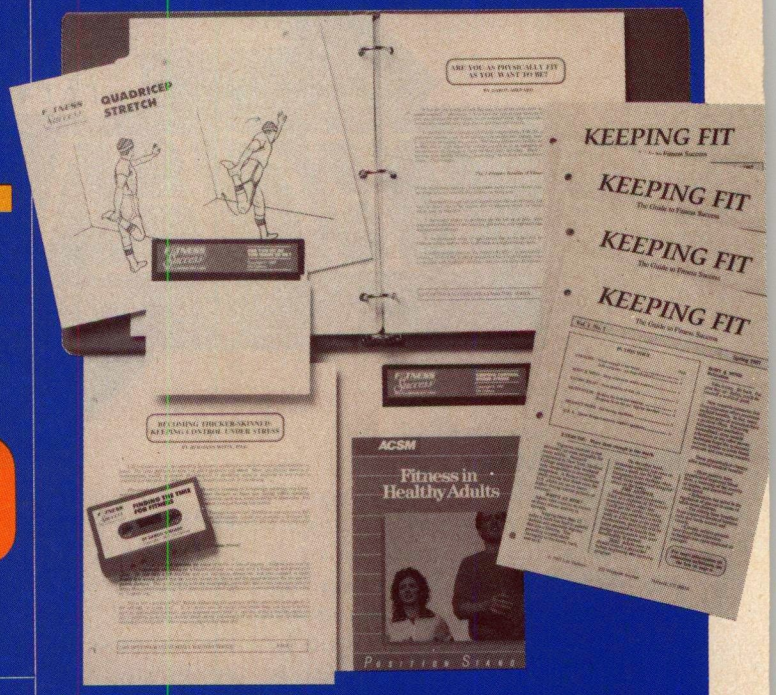
Requires: Apple IIe or IIGS; 64K RAM; one 5¼-inch disk drive. Not copy-protected.

LEGO Systems, Inc.
Education Department
555 Taylor Road
Enfield, CT 06082
(800) 243-4870 (except AK, CT, HI)
(203) 749-2291

CIRCLE READER SERVICE NO. **500**



LEGO TC Logo lets children write computer programs to control models they build out of LEGO elements.



Fitness Success deals with fitness and stress management

FITNESS SUCCESS

Fitness Success is a new integrated system that deals with cardiovascular fitness and stress management. The fitness program lets individuals test their current fitness levels, set up fitness goals and exercise plans, and monitor their progress on a weekly basis. Keeping Control Under Stress is an interactive program that evaluates a person's ability to deal with stress. The program includes software, an audio cassette, and background reading.

List Price: $99

Requires: Apple II Plus, IIe, or IIc; 128K RAM; one 5¼-inch disk drive. Not copy-protected.

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Norwalk, CT 06856
(800) 992-2218
(203) 846-3441

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DSM804

The DSM804 is a four-way data switch that enables users to attach four peripherals to one IIGS computer or link four computers to one peripheral. The compact unit is 1¼ inches high, and has reinforced printed circuit boards, push-button operation, all-metal construction, and a two-tone gray finish to coordinate with Apple computers.
List Price: $59.95
Requires: Apple IIGS
Data Spec
20120 Plummer Street
Chatsworth, CA 91311
(818) 993-1202
CIRCLE READER SERVICE NO. **502**

Electronic Specialists
P.O. Box 389
171 South Main Street
Natick, MA 01760
(800) 225-4876
(617) 655-1532
CIRCLE READER SERVICE NO. **503**

BASIC SKILLS PACKAGE

The Basic Skills Package is designed for prekindergarten to grade 1 and special education. The program uses colorful graphics and music rather than written instructions and numbers. Large plasticized input guides can be used either with the computer keyboard or as overlays with WonderWorker or PowerPad graphics tablets. All disks and input guides are color- and picture-coded to enable children to select or change activities without supervision. The entire package includes ten programs, picture input guides, stories, songs, circle discussion topics, black-line masters, and a teachers' guide.
List Price: $39.95 each or $298 for the entire ten-program package.
Requires: Apple II Plus, IIe, IIc, or IIGS; 64K RAM; one 5¼-inch disk drive; WonderWorker or Power-Pad graphics tablets optional (do not work on IIc). DOS 3.3; copy-protected (backups included).
DIL International
2025 Lavoisier, Suite 180
Sainte-Foy, Quebec
Canada G1N 4L6
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The DSM804 four-way data switch from DataSpec

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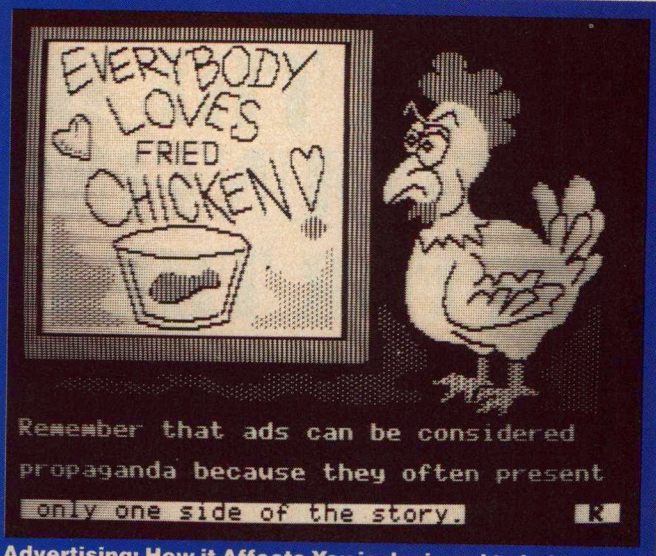

Advertising: How it Affects You is designed to help secondary and adult students analyze advertising.

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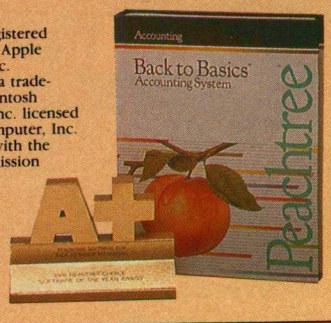

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List Price: $150 (single set); custom classroom packages available at special rates
Requires: Apple II Plus, IIe, or IIc; 64K RAM; one 5¼-inch disk drive. DOS 3.3; copy-protected.
Impact Educational Software Company
P.O. Box 9536
O'Fallon, MO 63366-1332
(314) 281-4811
CIRCLE READER SERVICE NO. **506**

PHILAPAL

Philapal is a software program for stamp collectors that keeps track of all stamps owned as well as such information as value, purchase price, issue date, and stamp condition. The program also allows collectors to create lists such as want lists and items sold for non-inventory items. The program can handle stamps from all countries and collections of any size. It also keeps track of the total value of the collection or individual sets.
List Price: $60
Requires: Apple II Plus, IIe, IIc, or IIGS; 64K RAM; two 5¼-inch disk drives; printer recommended.
ProDOS; not copy-protected.
Six-R Software
1116 A Eighth Street
Suite 120
Manhattan Beach, CA
90266
(213) 379-3278
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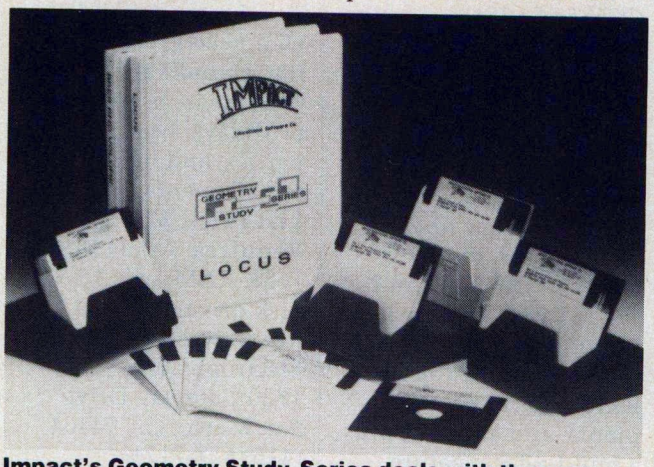

Impact's Geometry Study Series deals with the area and volume of geometric figures.

ASTRO-GROVER

Astro-Grover, a Sesame Street software package now published by Hi-Tech Expressions, is a number game designed for 4–6-year-olds with assistance from their parents. The game, which has five different levels, teaches counting, addition, subtraction, num-

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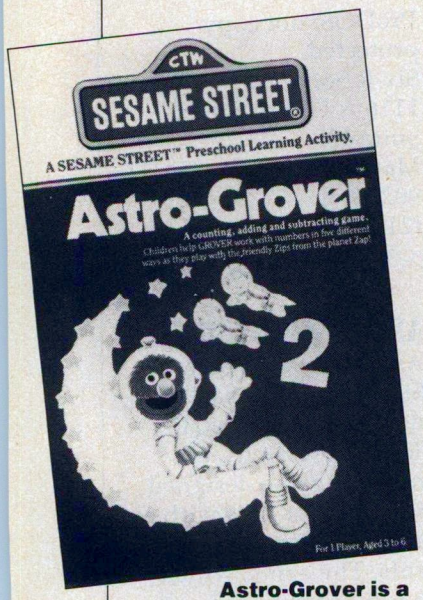

Astro-Grover is a Sesame Street software package number game for young children.

ber/numeric correspondence, and number-pattern recognition. The manual is written in an interactive story format.
List Price: $9.95
Requires: Apple II Plus, IIe, or IIc; 64K RAM; one 5¼-inch disk drive. Not copy-protected.
Hi-Tech Expressions
1700 N.W. 65th Avenue
Suite 9
Plantation, FL 33313
(800) 848-9273
(305) 584-6386
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CLIP-ART DISKS

Electronic Arts has announced the release of its Deluxe Library line of color clip-art disks for use with DeluxePaint II.

Art Parts, Volume 1 has images covering a wide range of subjects, including maps, charts, plants, and animals, plus a build-a-face feature with which users can build faces out of a collection of eyes, noses, mouths, hairstyles, and the like.

Art Parts, Volume 2 contains images of stars and planets, military and space items, lettering, street scenes, nature subjects, and more.

Seasons and Holidays has images for more than a dozen holidays and special occasions, including New Year's, Valentine's Day, Easter, 4th of July, Halloween, Thanksgiving, Hanukkah, and Christmas, as well as birthdays, weddings, parties, and back-to-school events.
List Price: $29.95 each
Requires: Apple IIGS; 768K RAM; one 3.5-inch disk drive. ProDOS 16; not copy-protected.
Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(415) 571-7171
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PROFESSIONAL PLOTTER

Professional Plotter is a program that produces many different types of graphs, including line, area, exploded pie, stacked bar, and others. You can enhance most graphs with three-dimensional depth. Five different plotting symbols are available in four sizes, and symbols can be filled (solid) or unfilled (outline).

You can print text labels on the screen, using eight different fonts. Professional Plotter can produce hard copies on most dot-matrix printers that use an intelligent printer interface. An optional program called Graph-Pak II lets you print out hard copies with virtually any printer and interface card.
List Price: $75
Requires: Apple IIe, IIc, or IIGS; 64K RAM; one

The Desktop Manager™ - The Ultimate Apple IIGS Desk Accessories

The Desktop Manager is a powerful tool for your Apple® IIGS. It gives you great Desk Accessories within virtually every application that runs on your GS. These desk accessories are not the cute little puzzles that other packages provide, but powerful and full featured applications that will unclutter your desk and help you get the most out of your Apple IIGS. **The Desktop Manager** comes complete with the following accessories that can be used within virtually **ALL** ProDOS 8 and ProDOS 16 applications:

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- Δ **Appointment Calendar** with auto-prompting. Set up to 15 appointments per day. TDM automatically notifies you of the appointment within any program!
- Δ **Printer Manager** lets you send complex controlling codes to your printer via easy to use menus. It has built-in macros and an intelligent typewriter.
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- Δ **Pickup & Paste** Text between applications. Quickly and easily transfer info. from one program to another!

The Desktop Manager (TDM) accessories all run in the background. This means that you can be in the middle of your word processor, data base, spreadsheet, painting or almost any other application that you use on your Apple IIGS, and a simple keypress will 'Pop-Up' the TDM menu. Here you can easily select any of the available accessories and in an instant you can be using the Note Pad, Appointment Calendar, Calculator or other TDM accessories. Short cuts are even available to instantly pop-up selected accessories.

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FRIEND-LEE SOFTWARE

Friend-Lee Software has released three new educational worksheet programs for the Apple II: Thought Problems for Critical Thinking Skills, Fraction Worksheets, and Higher Test Results.

Thought Problems for Critical Thinking Skills is a computer-generated math worksheet that uses individual student names in each example. The program lets you select the level of difficulty and generate an unlimited number of thought-problem worksheets.

Fraction Worksheets is completely menu-driven and allows you to select the level of difficulty. The types of worksheets you can generate include Naming Fractions, Comparing Fractions, Mixed Numbers, Addition, Subtraction, Multiplication, Division, Reciprocals, Decimals, Percents, and vertical and horizontal formats.

Higher Test Results is a reading/language series of 12 disks that generate worksheets in the same format as major achievement tests. The 12 individual disks include Alphabetical Order, Capitalization, English Usage, Figurative Language, Punctuation, Spelling, Structural Analysis, and Vocabulary. Each package is available separately.

Thought Problems for Critical Thinking Skills and Fraction Worksheets automatically print in large, double-width type.
List Price: Thought Problems for Critical Thinking Skills and Fractions Worksheets, $49.95 each; Higher Test Results, $49.95 per disk or $499.50 or entire series; backups $10 each (free of charge with the entire series)
Requires: Apple II Plus, IIe, IIc, or IIGS; 48K RAM; one 5¼-inch disk drive; printer. DOS 3.3; copy-protected.
Friend-Lee Software
6041 West View Drive
Orange, CA 92669
(714) 771-1678

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CAREERWORKS

CareerWorks is a ready-to-use AppleWorks database of concise information on more than 240 careers, designed for teachers, parents, guidance counselors, and students. This database provides access to details on more than 90% of all technical and professional occupations classified by the U.S. Department of Labor and 60% of all jobs in the US. The database has 22 categories, including start, average, minimum, and maximum pay.
List Price: $49.95
Requires: Apple IIe, IIc, or IIGS; 128K RAM; one 5¼-inch disk drive; AppleWorks. ProDOS; not copy-protected.
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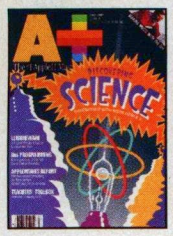

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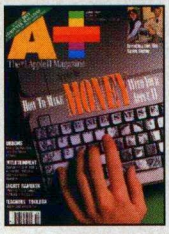

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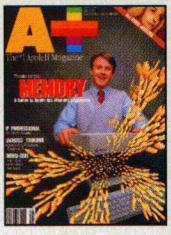

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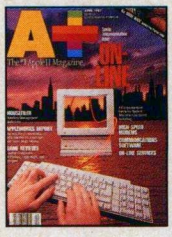
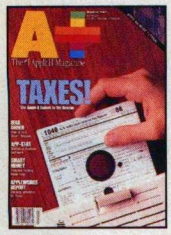


April 87—ON-LINE—A comprehensive guide for Apple II communications including High-Speed Modems. Communications Software, and On-Line Services; Mousefiler; IIGS Sound Magic Program Listing, Super Macroworks, Key-Player, AutoWorks and more.



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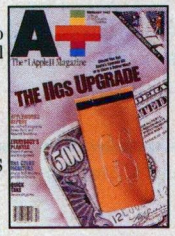

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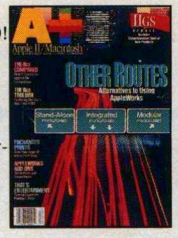

December 86—ALTERNATIVES TO APPLEWORKS, Plus IIGS compared to its competition; Exploring the IIGS Mac-like ROM: Turn your II into a print shop; ThinkWorks & ReportWorks and more.

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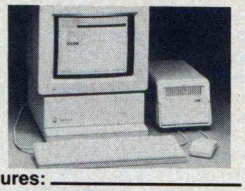

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Non-operating Shock	60g	Non-operating Shock	100g
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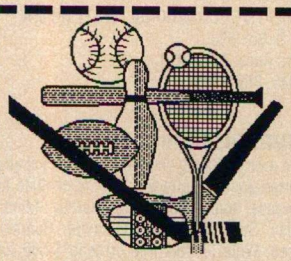

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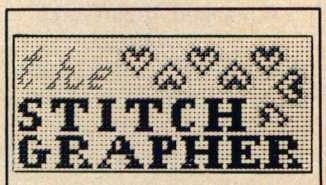

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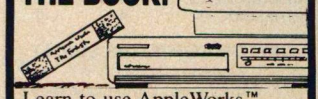

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Rescue Squad

BY GARY B. LITTLE

TRANSFERRING CP/M TEMPLATES

Q. *For several years I've been using the CP/M version of SuperCalc2 to create templates for solving feed-formulation problems I pose to my animal-science class. I have recently upgraded to SuperCalc3a, which runs under ProDOS. Is there any way I can transfer the templates from CP/M to ProDOS so that I won't have to spend hundreds of hours rekeying the templates?*

PROF. HAROLD A. RAMSEY
RALEIGH, NC

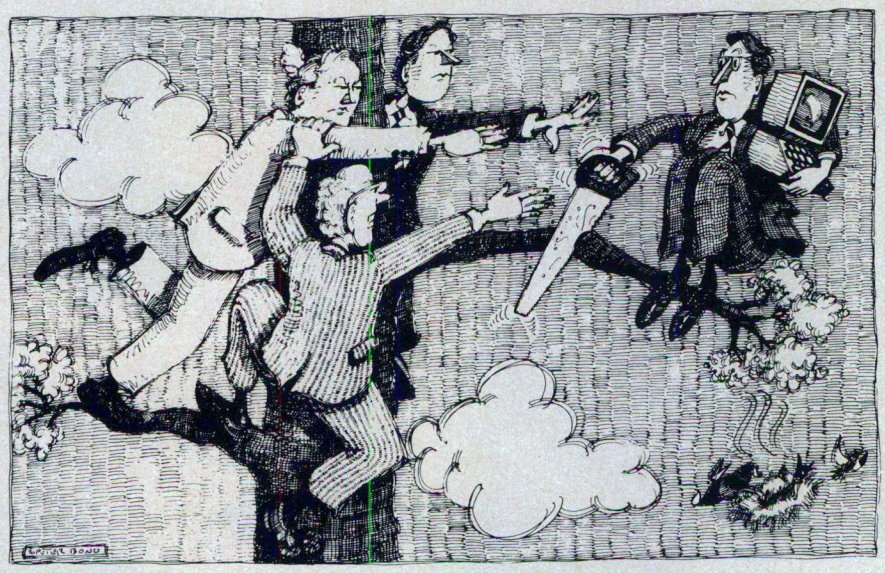
A. You can use a program called Universal File Conversion from Quality Software ([818] 709-1721) to transfer your CP/M files to a ProDOS disk. In fact, the program lets you transfer files among all four major operating systems for the II family (ProDOS, DOS 3.3, Pascal, and CP/M). The price is $34.95.According to Hilary Martinson of the technical-support division of Computer Associates ([408] 432-1764), SuperCalc3a can read SuperCalc2 files, so you won't have to modify the files at all after transferring them to a ProDOS disk with Universal File Conversion.

IIc MEMORY MAP

Q. *Where can I find a good memory map for the Apple IIc?*

SHANNON BROSKIE
PENNINGTON GAP, VA

A. Addison-Wesley has just published a new hardcover edition of the *Apple IIc Technical Reference Manual*, which describes exactly how the IIc uses the memory available to it. It also includes a complete ROM listing. You can order the book through most bookstores or directly from Addison-Wesley, 6 Jacob Way, Reading, MA; (617) 944-3700. My own book *Inside the Apple IIc* (Prentice Hall Press), also discusses the IIc memory map and gives examples of how to access "nonstandard" memory areas such as auxiliary memory and bank-switched memory.



TWO JOYSTICKS ON ONE IIe

Q. *Is it possible to connect two joysticks to the IIe, one for each player in a two-player game?*

GIBRAN VILENTE
KIHEI, HI

A. It certainly is possible to connect a pair of joysticks to the IIe, and to the II Plus and IIGS as well. It's not possible on the IIc, however, because its mouse port usurps the I/O addresses a second joystick normally uses. To connect two standard joysticks, you're going to need an adapter for the 16-pin internal game connector (I'm not aware of any adapter for the DB-9 external connector on the IIe and IIGS). An adapter has two sockets on it, one for each joystick, and circuitry to ensure that the joysticks use different I/O addresses. Two types of sockets are commonly used: a 16-pin socket for joysticks designed for the internal game connector and a DB-9 socket for joysticks designed for the external connector. The most popular adapter appears to be the $29.95 Paddle-Adapple from Southern California Research Group (P.O. Box 593, Moorpark, CA, 93020 [805] 529-2082). It comes in three flavors: one with two 16-pin sockets, one with two DB-9 connectors, and one with one of each type of connector. Keep in mind that even if you have installed two joysticks, the game you're using may ignore the second one and insist that the second player use the keyboard instead. Read the instructions for the game to see if it is designed to work with two joysticks. ✚

Gary Little is the senior technical editor of A+ and author of several books on Apple computers. Please send your questions and problems to Rescue Squad, A+, 110 Marsh Drive, Suite 103, Foster City, CA 94404. Because of limited space, we can't publish responses to all inquiries we receive.

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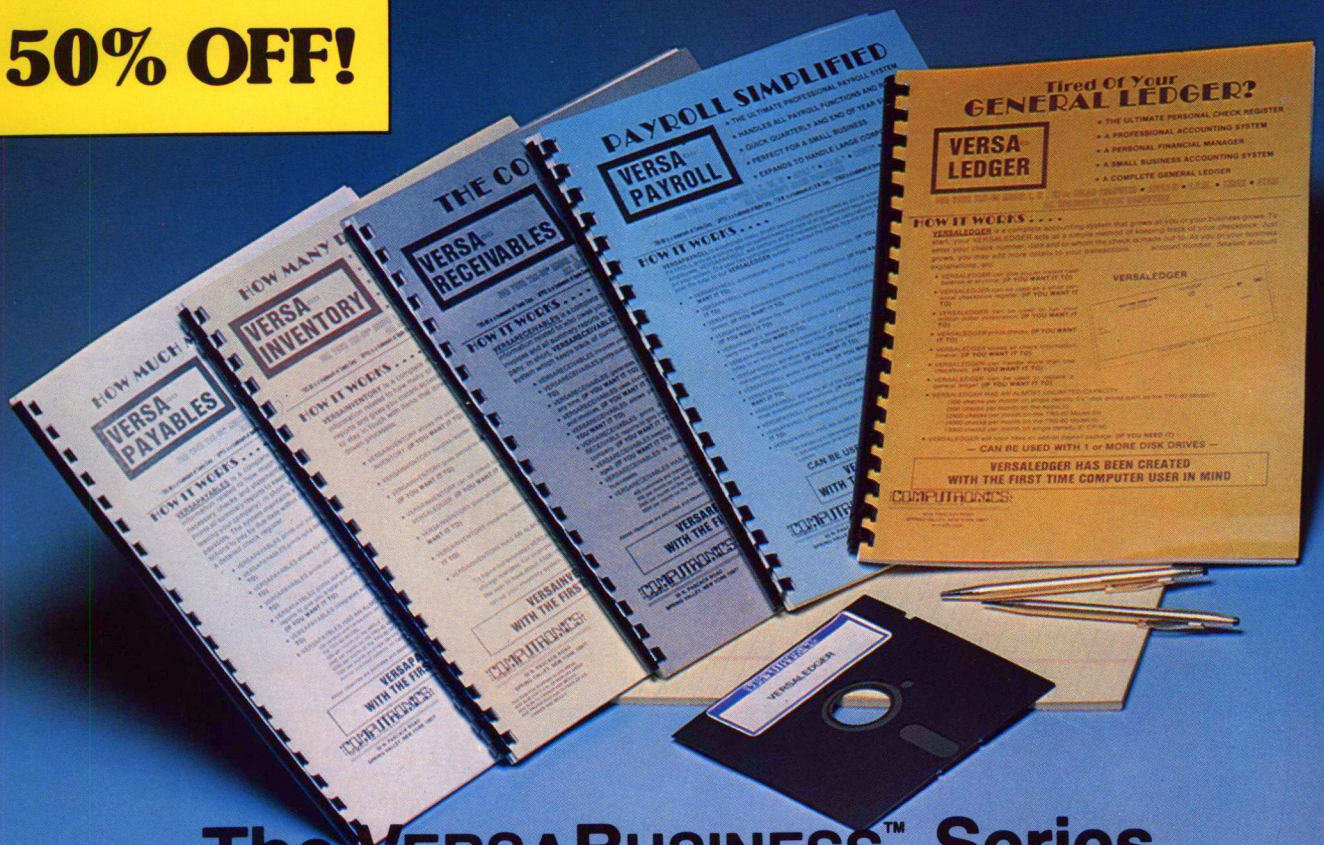

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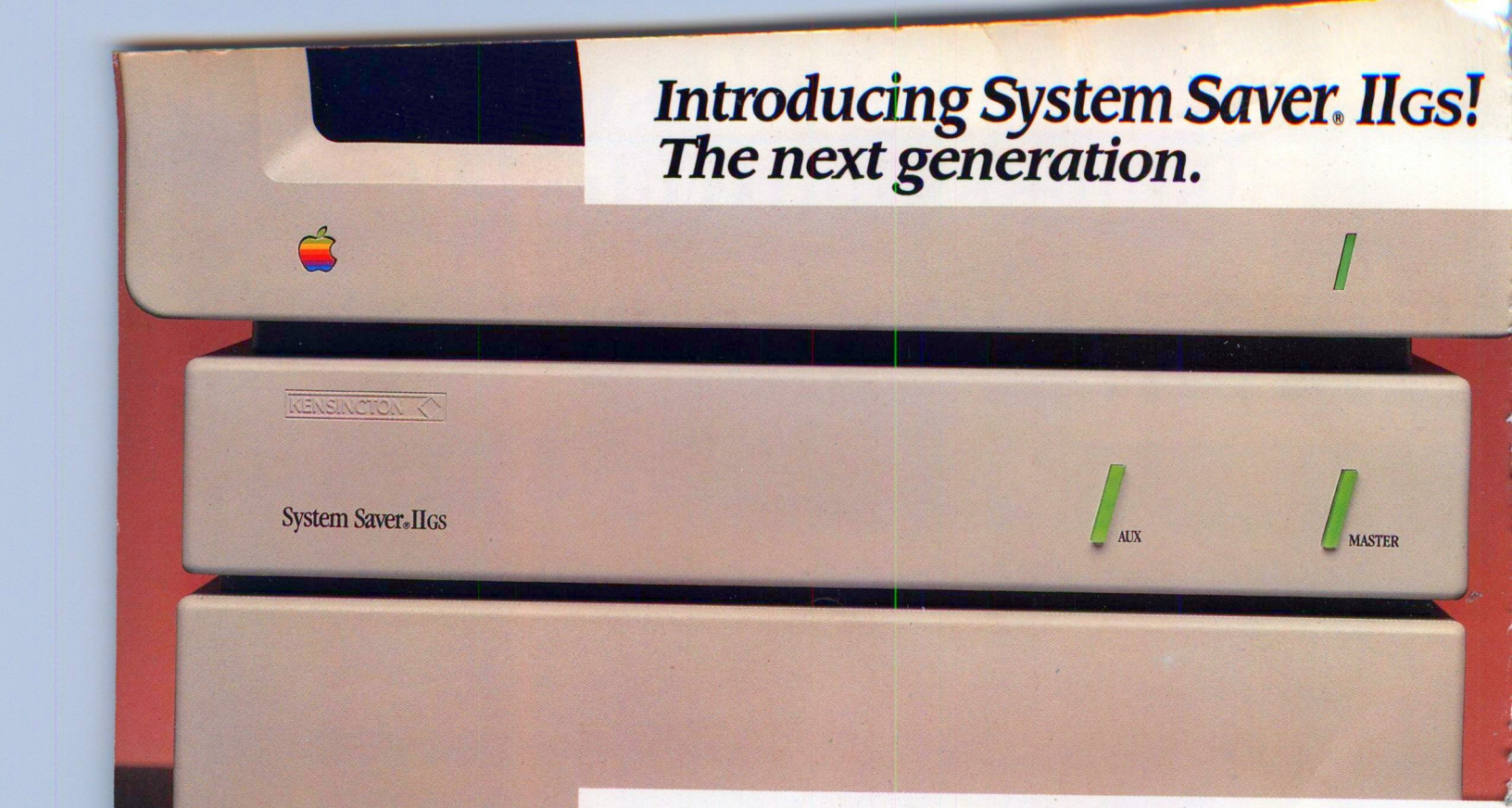

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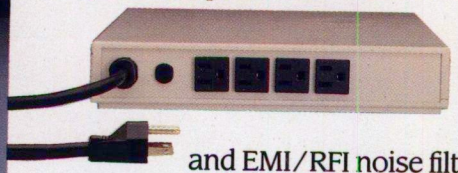

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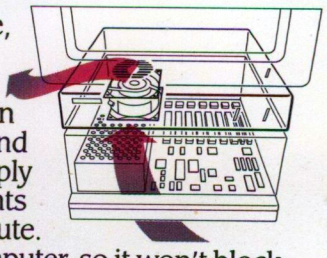

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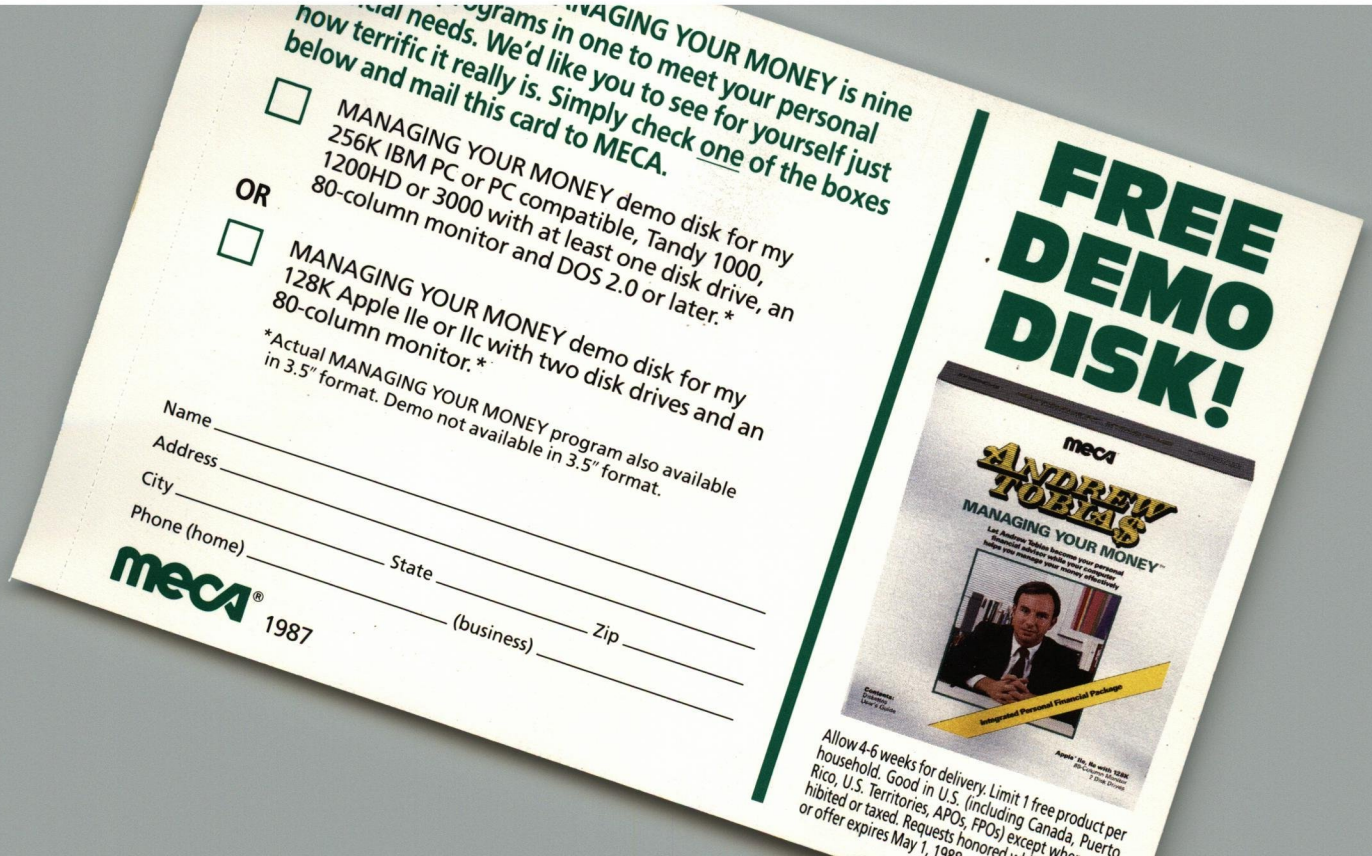
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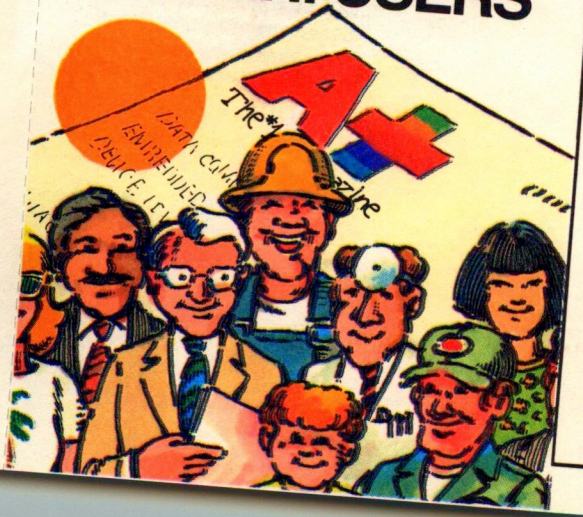

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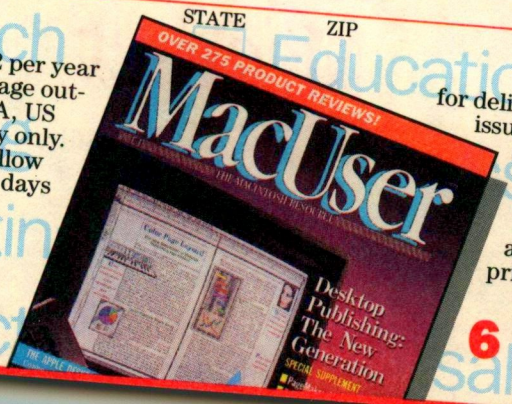

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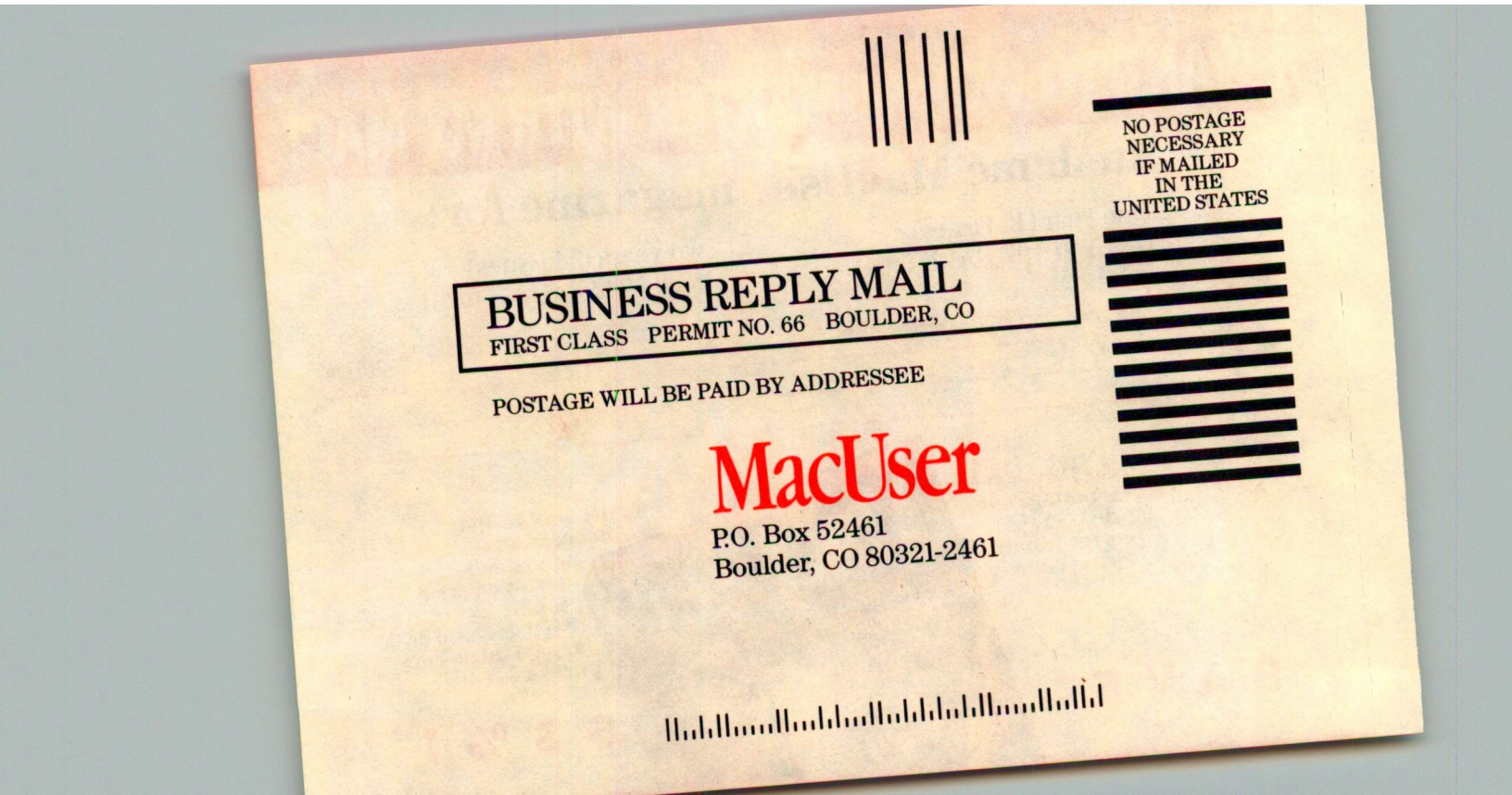
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OFFICIAL BALLOT

1988 A+ READER'S CHOICE AWARDS

Complete your ballot, selecting the software/hardware that you have worked with on your Apple II system. Please write the correct name of the software package and model number you are voting for.

Incomplete information cannot be tabulated. Mail this ballot BEFORE December 21, 1987 to make sure your vote counts and your name is entered in the A+ APPLE IIGS SWEEPSTAKES!

■ **My favorite Apple II software is:**

EDUCATION:

Home Education_____

Classroom Education_____

ENTERTAINMENT:

Arcade Package_____

Sports_____

Simulation_____

Fantasy/Role Playing_____

GRAPHICS:

Paint Programs_____

Charts/Graphs_____

Desktop Publishing_____

Clip Art_____

PERSONAL:

Personal Finance_____

Music Software_____

Other_____

BUSINESS/PROFESSIONAL:

Database Management_____

Telecommunications_____

Accounting_____

Spreadsheets_____

Word Processing_____

Other_____

■ **My favorite Apple IIGS Software is:**

(1)_____

(2)_____

(3)_____

■ **My favorite Apple II Hardware is:**

RAM Boards_____

Multifunctions_____

Modems_____

Joysticks_____

Hard Disk Drives_____

Printers_____

Other_____

This must be completed to be eligible for the IIGS Reader's Choice Contest.

Mr./Mrs./Ms._____ Title_____

Company_____ Phone (____)_____

Address_____

City_____ State_____ Zip_____

I own/use an _____ (which Apple II model)

Your completed ballot must be returned by December 21, 1987. Winner of the Apple IIGS system will be notified by telephone and listed in the May 1988 issue of A+ Magazine.

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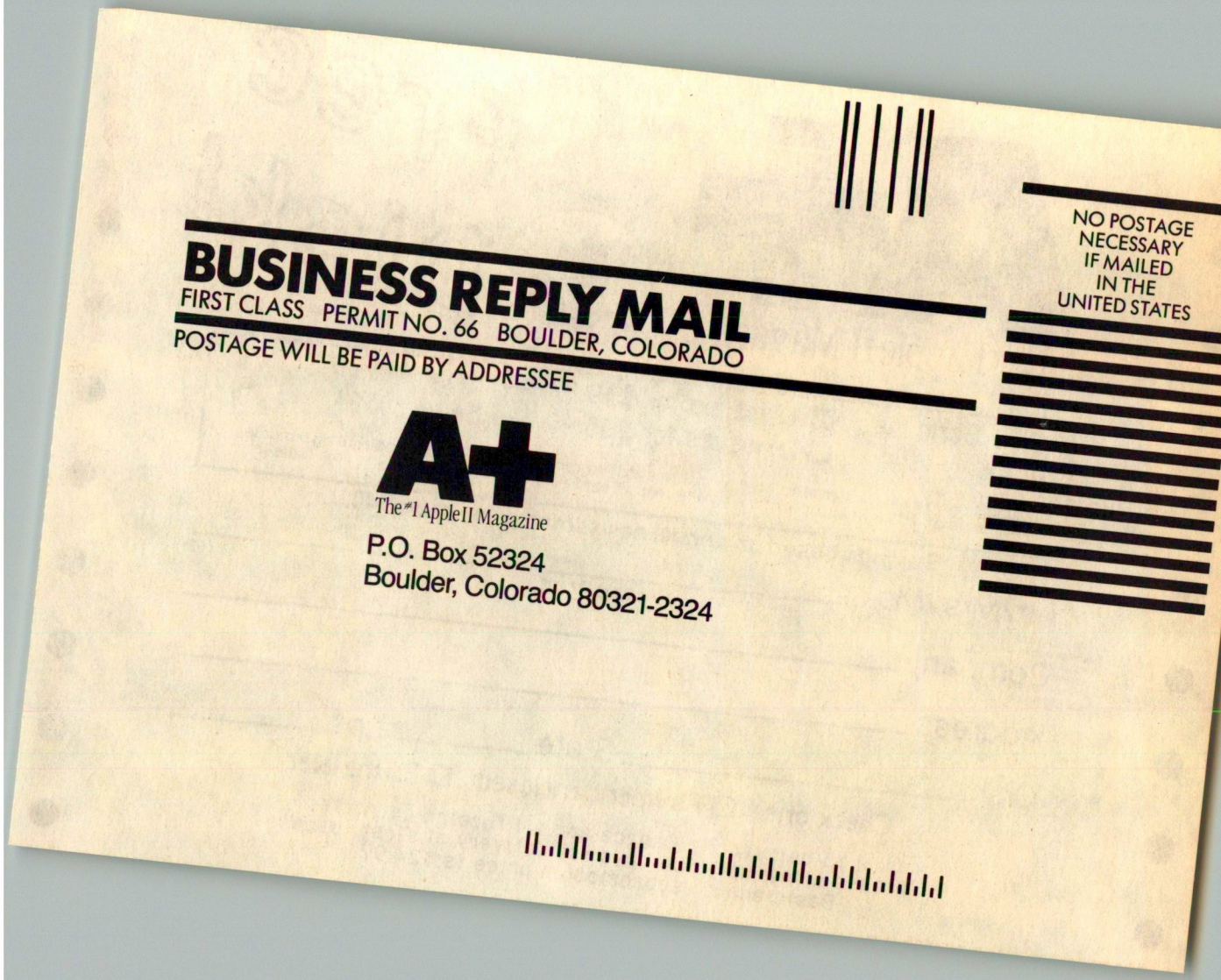
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